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IMAGINATION,
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MUTUAL AID

A FACTOR OF EVOLUTION

By

Prince Peter Kropotkin

Crown 8vo, 2/- net

“A most suggestive and stimulating study, showing not only immense range of reading and observation, but also a most attractive and generous personality.”

LONDON: WM. HEINEMANN

IMAGINATION, LABOUR, CIVILIZATION

BY
EINAR SUNDT

WITH BIBLIOGRAPHICAL INTRODUCTION BY
S. C. HAMMER



LONDON: WILLIAM HEINEMANN

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TO

MY DEAR WIFE

T H E R E S E

WHO HAS LISTENED DURING SO MANY YEARS
PATIENTLY AND ALWAYS WITH ENCOURAGEMENT
TO MY TALKS AND DREAMS OF THIS BOOK

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PREFACE

THE AUTHOR AND HIS WORK

THE author of the present work, the late Mr. Einar Sundt, was born at Christiania in 1854 and died during a visit to Stockholm in 1917.

His father was the famous Eilert Sundt, a clergyman by profession, and one of the most striking personalities of nineteenth-century Norway. Eilert Sundt was above everything else a keen realist, imbued with a deep patriotism and a highly developed conception of the social aspects of life. He made it his life-work to penetrate into the very depth of his nation's existence, to study the conditions under which it lived, and to explain its mentality on the basis of the facts he had observed. It is the lasting honour of Eilert Sundt to have given us a more faithful picture of Norway in the middle of last century than any of his contemporaries, especially as far as the lower classes are concerned; but the economic aspects, quite naturally, did not present themselves to him in the same way as they did to his son. In Eilert Sundt's works economic questions hold an inferior place. To Einar Sundt they were the very pivot of society; and, throughout his life, he studied them with an intense interest, chiefly from a practical point of view in his capacity as editor of the well-known Norwegian weekly journal *Farmand*, which he founded in 1891.

At the time when he started *Farmand*, Mr. Sundt had about ten years' experience behind him as a contributor on economic questions to some of the leading papers in Norway and Sweden. During the whole of this period Mr. Sundt lived in London, where he got the pronounced predilection for England and the English which never forsook him. He was struck by the economic might of the British Empire, by the way in which the British nation looked upon business, by its sound reasoning,

its fair dealing, its broad-mindedness ; and when he returned to his country he thought he could do nothing better than to try to plant some of these qualities in Norwegian soil.

He wanted to raise the business community of Norway, at that time somewhat undeveloped, to a higher conception of its importance by closely following the economic development of the country and by viewing it in connexion with contemporary events of the world at large. At a time when politics occupied—not to say obsessed—the minds of the nation as a whole, Mr. Sundt never tired of raising the standard of the economic discussions, and of bringing their importance home to the public. His journal became in this way one of the chief sources of the economic history of Norway within the last quarter of a century, and no one who wishes to study this question can dispense with its files.

The present work, which the author conceived when still a young man, and the ideas which—as he wrote some months before his death—he “struggled hard to develop into clearly defined theories out of which might grow a complete system of Political Economy,” reveal the late Mr. Sundt in a new aspect. Those who met him in his daily work, in the midst of the kaleidoscopic hurry of questions as they present themselves to the modern journalist—always nervously interested, strong in his sympathies and his antipathies, never afraid of speaking his mind—could hardly have realized that the undercurrent of his mind pre-eminently was one of reflection and calm reason. Nothing would have more surprised them than to learn that this man, who, in the opinion of many who knew him well, very often seemed to jump at his conclusions, was, on the contrary, a slow thinker, filled with ideas which he revolved in his mind for a generation in order to turn them into a complete system. Yet his book proves this to be the case. Viewing together the needs of man and the labour he must perform to satisfy them, the author ultimately came to the conclusion that it is the productive ideas of man’s work, materialized one after the other, which constitute the foundation of the fabric of human civilization. It was the sum of his leisure thoughts after the toils of the day.

The author, while fully aware of the deficiencies of his work—“the signs of the piece-meal production of which an observant

reader will easily detect," to use his own words—regretted that he had "neither time nor patience" to recast it, at a rather late hour in the day when his physical forces were already failing. But, on the other hand, he believed that the theories propounded in his work "of the tendency of wages towards uniformity; of the relation between wages and profit; of the determining influence upon the entire economic evolution of the increasing rate of capitalization, of rent, etc., would stand the test of close examination." He also felt convinced that these theories would "throw light upon many obscure points in the history of the evolution of our civilization."

Those who have known the late Mr. Sundt personally will frequently be reminded of him in his work. Those who meet him in his work for the first time will learn to appreciate some of the qualities in him which appealed most strikingly to his friends.

It may be added, in conclusion, that the work was conceived and completed in English, and that it was finished in the year 1917, a few months before Mr. Sundt's death. Parts of the historical sketch, in the latter half of the book, therefore, represent a condition of Europe which no longer exists. On the other hand, it will be observed that his economic forecast of the post-war period has not yet been fulfilled.

It was the ambition of the author to submit the result of his thought and his researches to the students of the British race which so largely contributed to unfold his views and conceptions; and, in presenting his work to the public, the trustees of his memory are performing an act of personal tribute which at the same time they hope is justified by the intrinsic value of the book.

S. C. HAMMER.

October 1920

IMAGINATION, LABOUR, CIVILIZATION

CHAPTER I

INTRODUCTION

GEOLOGISTS have not been able to agree as to the period when man made his first appearance on the earth; it is certain, however, that he has existed here during a very long time, even when time is measured not in hundreds or thousands of years, but in geological epochs. Many generations may have lived and passed away without leaving any trace; and we shall never be able to learn anything about the painfully slow processes through which human reason and productive ability were gradually evolved from their first beginnings.

History, or a fairly continuous record of the happenings of mankind, dates from the oldest Egyptian and Mesopotamian antiquities, and covers only some 6,000 years. The cave dwellers in France, who have left well-made stone axes and wonderfully executed carved pictures of the mammoth, lived in a very hot and moist climate, which preceded a comparatively cold and dry epoch, during which France was peopled by reindeer hunters, who were also artists and have left fine pictures of the reindeer. This reindeer period was again anterior to the European glacial epoch. The implements and pictures produced by these two pre-glacial peoples evince such skill that there is some justification for speaking of a civilization in connexion with them.

The roots of the oldest languages belong to a dim and distant past, much beyond the oldest antiquities, and many of these roots denote simple and rudimentary forms of implements and production, but not even a study of the language roots

takes us back to the beginning of things, to a time when our ancestors had perhaps not yet learned to make use of articulate speech.

Mankind came into existence with the first being who experienced desires and wants that could not be satisfied by the things with which nature surrounded him. From the very moment when man commenced to "produce" the "commodities" which he wished to use, he had become a being totally different from all other animals on the earth. These consume their food in the condition in which they find it; and there is no animal, except man, which has ever made itself clothes of any kind.

The transcendent mystery of our excellence is this: why, how, or when did man, anatomically an animal, alone among the animals obtain the gift of purposive imagination? Or how could a being, which had seen no garments made by the hand of man, imagine that it was naked and feel a want of garments? Or whence came a craving for cooked food, before man had learnt that it was possible to kindle a fire?

This mystery evades all attempts of exploration or explanation. We must rest content to accept as a fact that the human race either possessed originally, or acquired at some time during its existence, desires and wants which could not be satisfied except by production, i.e. by creating with labour objects that did not exist in nature; and we must also accept as a fact that man either possessed originally or afterwards acquired a brain capable of imagining such previously non-existent products.

Man, anatomically so near akin to the higher animals, differs from them all in this one respect: he has wants and desires which cannot be satisfied by any natural objects, he must alter, more or less, those things which he finds around him, to make them suitable for his requirements. It is this designed alteration, requiring human labour, which is called production. Moreover, if man has descended, as the evolutionists tell us, from the same stock as the anthropoid apes, he owes his differentiation from those cousins to his desires, coarse and foolish though they must originally have been, because they have compelled him to work.

The human body, under the direction of human intelligence, is the instrument which has enabled man to dominate the animal world, although he is less strong than some animals, less swift than others. Those hairy, ape-like animals which climbed the trees and lived on nuts, and who are said to have been our ancestors, must at one time or another have begun to lose by imperceptible degrees their original ability to live on those things which nature offered them, and simultaneously they must have begun to acquire tastes, desires, and wants which did not previously exist in them. Even on the supposition that the first faint signs of human intelligence began to manifest themselves at the same time as the incipient desires, it is hard to conceive how his reason could possibly have developed with sufficient rapidity to save from extinction a being that was already losing more or less of its animal independence and instincts.

The difference between instinct and intelligence is one of kind and not of degree. Intelligence is the child of imagination. Many animals possess the most wonderfully developed instincts, they act as if they were governed by rational motives ; but the imaginative element is completely lacking, and therefore there is never any innovation. Bees build and regulate their hives precisely in the same way now as countless preceding generations of bees have done, while the distinctive mark of all human work is that it is not uniform and not perfect. When animals shape anything at all they follow their unerring instincts, and the resulting forms are perfect and constant. Man, trying to mould refractory matter according to the dictates of fancy, only succeeds imperfectly ; the variations and the very faultiness stamp every product of human handicraft as the work of a hand attempting with difficulty to realize the ideas of an imaginative brain. Many of the inventions which man has made in the course of countless generations have been due to the very fact that useful variations have happened, because human products are imperfect, and therefore differentiated, even when made to materialize the very same idea.

Man, being placed on the earth filled with cravings that could not be satisfied by existing things, has been prompted by his desires to look for invisible things, and out of his inner

consciousness he has created something which had never before existed.

By the missing link evolutionists mean a being which anatomically connects the common prototype of man and ape with our human ancestors. The real missing link, however, would be a being that was anatomically a man, but mentally still an ape, without any trace of inventive imagination, and who had not yet shaped a single object with a purpose. This missing link has not been discovered, and probably never will be found. On the contrary, traces of human handicraft seem to have been contemporary with the oldest remains of man, and wherever we find an object so shaped that we can judge that it has had a purpose, we come unhesitatingly to the conclusion that man made it.

The genesis of human intellect will for ever remain a fascinating but insoluble mystery. We are so completely surrounded by the materialized ideas of man, the purposeful products of human labour, that by no mental effort can we imagine the world peopled by men without containing also the products of man. But we know that our planet had existed for a very long period before man made his appearance, and, human history having a beginning, there must, consequently, also have been a time when the first object of human handicraft was not yet produced.

It is difficult for us, who have grown up with railways, telegraphs, and telephones, and all the other paraphernalia of modern life, to picture to ourselves how life appeared in the Middle Ages, or in classic Rome or Athens. Still less are we able to imagine how the ancient Europeans of the Stone Age who were the contemporaries of the mammoth contrived to get along. But it is difficult to imagine the men who lived before the inventor of the first stone axe, and wide steps divide them from those who first used a bow and arrow, from those who first discovered a means of making fire, and from those who made the first mats by braiding or roughly twisting fibres between each other.

With these inventors—the Watts, Arkwrights, and Stephenson of prehistoric ages, perhaps 100,000 or 150,000 generations ago—we come down to the bed-rock from which the evolution of human intellect has started.

The simplest matting could not come into existence unless a reasoning being first conceived the idea that fibres might be put together by twisting them in and out. One may suppose that this being had played with twigs or grass, and had observed during the play that if he placed them together in a certain manner, they remained in the same position. It is, on the whole, most probable that these early ancestors of ours, who must have lived in a genial climate, were playful, and that they obtained their rudimentary knowledge of matter in playing with it and tearing it to pieces, as little children still do. But they must have had undefined cravings, which they tried to satisfy, and, in seeking that by which this craving might be stilled, they learned something very valuable—some of the qualities of matter. Both looking for something and finding it would have been impossible without imagination and without a reasoning power, only slightly developed, of course, but containing the germs of development.

Perhaps the reader may object that even the mat is not conclusive evidence that these beings were capable of conceiving ideas. Let us therefore take another example. It may be that the bow and arrow mark an epoch, relatively as decisive in the history of prehistoric man as the invention of gunpowder at the end of the Middle Ages. Will anybody really deny that the prehistoric man, who had seen nothing in the entire world suggestive of a bow, must have had some idea in his mind that experiments might usefully be made with a piece of cane and a string? A string does not exist in nature; that a piece of cane is elastic the prehistoric man may have discovered quite empirically, but these two things would never have been put together but for man's imagination, which suggested to him the idea of a bow. The word idea is here used without the slightest metaphysical tinge, simply because no other word conveys the same meaning of an image on man's brain of a thing that does not exist, but which springs into being because man wishes to use it for a purpose.

The bow and the arrow tell a long tale of these our distant ancestors. If a man who had no proper tools and no examples to go by, or any experience of his own, were to make at the present day a bow and arrow, it must of necessity become a

most clumsy and practically a worthless thing, which could not be used as a weapon against other men or animals. We know that the bow and arrow were brought to a high degree of perfection by the ancients, and some living savages have dangerous weapons in their skilfully made bows and deadly arrows. It is hardly possible to conceive how the first imperfect bow that was made on this earth could have been anything but a plaything, and we are therefore almost constrained to hold that the inventor and his tribe must have been like us in this respect, that they spent time and labour in inventing and perfecting instruments of play.

An object which has been shaped by human labour to serve a purpose is a materialized idea which remains a living and active force, independently of its creator, as long as the object retains so much of its form that the purpose for which it was made can be recognized. For there is this peculiarity about the materialized idea and its relation to the human brain, that those who see the object in which it is embodied, unless it be too complicated, understand the purpose as well as the brain which conceived the idea and invented and produced the thing. Moreover, it lives not only in the object in which it was originally embodied, but it is transferred to and lives likewise in all objects which are made in imitation of the first. The purpose for which a thing is shaped speaks to the human brain just as much as the spoken or written word, sometimes much more forcibly; and, like words, a materialized idea may be retained in the memory, and may be reproduced after lapse of time. It is, in fact, conceivable that the discovery how to kindle a fire by rubbing a hard and soft piece of wood against each other may have been made before man had begun to use articulate speech. If this really happened, the method might have been imitated by other speechless beings, whom we should nevertheless be constrained to acknowledge as our ancestors, because the imitation for a purpose would indicate incipient reasoning power.

This independent life of materialized ideas makes them the germs from which has been evolved that wonderful organ, the human intelligence, which contains the accumulated wealth of ideas and experiences of the countless generations

that have lived since the first stone axe was made. The really epoch-making period in the history of mankind is therefore the time when the simplest tools were invented, and the first materialized ideas were created. These have ever since been reacting on their creator, and humanity could not now, even if it ever so much wished to do so, dissociate itself from the overwhelming influence which materialized ideas have exercised upon the evolution of man. All existing objects which embody these ideas might be destroyed; new ones, like them, would immediately be made, for the ideas would continue to live embedded in our memory, having shaped our consciousness in their image.

Let it be emphasized again that there is nothing metaphysical about these materialized ideas; on the contrary, they are very physical indeed. The man who wishes to make a stone axe must have in his mind an idea beforehand of what it is to be like, and of his purpose in making it. This idea exists before the labour is undertaken, and is a function of his mental faculty; but when he comes to realize it, the material offers resistance, and the execution corresponds only partially to the image in his mind.

We possess no products which date from the beginning of human evolution. The oldest antiquities which have come down to us belong to people who were already somewhat advanced in knowledge and ability. In a well-arranged collection of stone implements we find undeniable indications of progress at the very remote age from which they date. Successive improvements of the stone implements were made, both as to design and execution, showing that the people who produced them were able to learn by experience and to advance in skill.

A stone, which has been shaped for a purpose, no matter how crudely executed, presupposes the capacity of conceiving an idea and a purpose, but apart from these two images on the brain of the form and the purpose, a material is required if the conception is to be realized, and this material offers resistance to the execution which must be overcome not only by physical but also by mental exertions.

This resistance of the materials in which we are compelled to embody our ideas has been the great hindrance to production, but it has at the same time been the main cause of the

intellectual development of mankind. While those animals which build nests or otherwise act on highly developed instincts generally produce perfect things, the great characteristic of human products is their individuality and irregularity. They are, in fact, generally more or less faulty. This is largely due to the resistance of the material. Being more or less clearly conscious of his own idea, man can measure how far he has failed in realizing it; and he is thereby prompted to give his close attention to the qualities of the materials, in order to find out why he does not succeed.

Under this struggle with matter man has learned more and more of the properties of matter; and his mind, enriched by these experiences, has expanded, and has thereby gradually become able to conceive more complex productive ideas. Many generations of primitive man must have been occupied with the production and the gradual improvement of stone implements before it became possible to hit upon the idea that a hole could be made in a stone axe by means of the leg bone of an animal by moving it rapidly against the stone, with sand and water to supply the grinding effect.

In the workshops from the Stone Age which have been discovered, partially completed implements have been found; and by studying these we learn that the workmen used their brains. When they found that a stone on which they had begun to work was faulty, or when they had made a mistaken cut and spoilt it, they either threw it away, as a modern workman might do under similar circumstances, or they modified the design in order not to lose the work which had already been spent upon it. This demonstrates that they did not work thoughtlessly, and that their attention was closely riveted upon the work in hand. A sculptor, who was once asked how he produced his beautiful statues, is reported to have given the following reply: "Nothing is easier, I only cut away those portions of the stone which cover the figure." No Stone Age man could have used this *bon-mot*, but they acted precisely as indicated by the sculptor. By long practice the eye became so sure, the hand so supple, that the finished implement with its exquisite lines frequently became a marvel of beauty. A modern draughtsman would not be able, with all the means at his command, to produce a better designed stone axe than

the best examples which have been found. They present an almost perfect materialization of their idea. The material has been studied so intimately that no better realization of the purpose could be imaginable as long as stone only was available for material. Most people probably think of the Stone Age man only as a barbarous brute; it may, however, be an open question whether we, the moderns, have equalled the Stone Age man at the period of his highest development in the perfect use of the quality of materials. His design absolutely fitted the material—he had cut away every particle of matter which was not essential for the materialization of the idea.

In the Stone Age workshops grinding stones were in common use. It may have been accidentally discovered that hard stone has the peculiarity that it may be sharpened when ground against a moistened soft stone, in which respect stone behaves just like steel. But only men whose productive intelligence had already been highly developed by long training could have conceived the idea of using an animal bone with sand and water to grind a round hole in a stone axe. No doubt the first holes that were made in stone axes to hold the handle were made by grinding away with a substance having a diameter equal to the desired hole. But afterwards the hole was made with the help of a leg bone. Axes have been discovered which were left unfinished, and where the hole has only partly been bored, still showing the circular core. Anyone who will look at the leg bone of a sheep, for instance, will see at a glance how much labour was saved when such a bone was used, because in that case only a thin circle of stone, a little wider than the walls of the bone, had to be ground away. We cannot say that this was the first or the only labour-saving invention which was made in the Stone Age. On the contrary, there is every reason to believe that a race which had reached such a high intellectual development that it could conceive an idea of using leg bones in this manner, has probably made many other important inventions. In any case we know that they invented this process, which fact alone is sufficient to prove that at that period man had travelled far along the road of his technical evolution.

If beauty is defined as perfect harmony between design and material, the Stone Age man has left sufficient samples of excellent achievement to show himself to have been an artist of no mean order. But besides utilitarian stone implements of exquisite design and workmanship, there have also been found real pictures or carvings executed by him. And from this we must draw the conclusion that he took pleasure in reproducing purely artistic conceptions without other purpose than to please his senses.

The discovery that certain vegetable substances possess colouring matter, which may be used to colour textile fabrics, was perhaps made already by the Stone Age man, and the use of these colours is certainly extremely old. There is nothing in the appearance of the roots which have been commonly used for this purpose which could suggest that an extract from them can impart a brilliant colour to textile fibres; and these colours do not become fast if the fibres are not treated with certain chemicals which fix the colour. What a remarkable thing it is, when you come to think of it, that prehistoric man can have learnt the very complex chemical processes which are required. The chemical substances that must be employed to fix the colours are not found where the colouring plants grow. There is only one conclusion possible: the prehistoric man who first invented a method of colouring textile fibres with vegetable colours must have been an experimentalist. His curiosity must have prompted him to make experiments at random with many substances, and only for the sake of experiment. Or shall we rather say, that at this very remote age the whole race must have been filled with curiosity as to the nature of surrounding matter, and must have been constantly trying to learn by experiment something about it? This last supposition is probably the true one. For thousands upon thousands of what we should now call scientific experiments must have been made before this property of the colouring plants was accidentally discovered and the fixing chemicals were simultaneously used.

Quite similar observations may be made with regard to the discovery of the metals. The ores from which metals are extracted are totally unlike the metals, except gold which is found native; and there is nothing in the appearance of

the ores which would suggest that they might be made to yield a useful thing when submitted to the action of great heat. Furthermore, the metals which are obtained by a smelting process, gold and silver alone excepted, are not very well, if at all, suited for the purposes to which they have afterwards been adapted, before they have undergone further treatment. Pure copper is too soft to be used for implements or weapons; and the iron as it comes from a smelting kiln will not make good knives or swords, being either too brittle or too soft. It must first undergo a further treatment. Both copper and iron, when first discovered, must therefore have been almost, if not quite useless; just as the first bow and arrow that man made must have been so imperfect that they could not possibly have been used as a weapon. It must have required many accidental or designed experiments with the smelting of ores before man first secured a piece of metal; and this piece must have been practically useless to him. Only after a great number of subsequent experiments, which, among other things, must have involved the designed or accidental mixture of copper with tin, did man obtain a metal which he could use.

There is nothing in nature which suggests either plant colouring or metals; the men who discovered them could have no idea of the utility of either. Only curiosity as to the nature of the surrounding matter could have prompted them to start that unselfish search for the unknown, which has never been abandoned, and which still occupies humanity.

To explain complex phenomena it is necessary to start from certain axioms or suppositions. *Homo sapiens* has been, from the first occasion when we meet him on the earth, a reasoning being with imagination; beauty appealed to his feelings, and he had been filled with curiosity. When, how, or why he obtained these characteristics, which distinguish him from all other animals, we do not know; but being active elements in his mental constitution they have created in him that variety of desires which has compelled him to produce things. These, his materialized ideas, have reacted on his brain. Out of this action and reaction man's evolution has resulted.

CHAPTER II

PRODUCTION

A MOST remarkable circumstance in connexion with the productive evolution of man is, that he had materialized nearly all fundamental productive ideas, and even produced works of art, before he discovered the art of smelting metals. Gold, which is in some places found pure, was, however, known to the Stone Age man and used by him.

The first metal which was discovered, after gold, was copper. Later on tin was discovered, and a lucky chance which led to the smelting together of copper and tin placed the new and valuable metal, bronze, in the hands of man. This important event happened between 3000 and 4000 before the Christian Era. And the still more important discovery of the art of smelting iron is placed by the best authorities not later than 1300 to 1400 before the Christian Era.

The use of metals is therefore not older than about 6,000 years as regards bronze, and not much more than 3,000 years as regards the still more important iron. During ages that must be reckoned, not in years, but in geological epochs, man had existed without having the help, which to us appears absolutely indispensable, of these metals; and in spite of this enormous drawback he had succeeded in materializing practically all the fundamental productive ideas—weapons, implements, garments, houses, pottery, the cultivation of cereals, the domestication of animals. What more do we, of the Iron Age, do? Truly has it been said that there is nothing new under the sun. We shall later on have occasion to observe that many, perhaps most, of the elements of architecture and of art decorations also date back to the Stone Age, or, at all events, to the very earliest part of the metal ages.

It has taken man an immeasurable number of generations to take the first step along the never-ending road of technical

and intellectual evolution ; only faintly can we follow the more recent of these steps. But history, which partially sheds its light upon the happenings around the Mediterranean from about 4,000 years before the Christian Era, could not have been written if human reason had not been slowly developed by the many preceding generations, which conquered the world with a stone axe, while their imagination filled their surroundings with countless purposeful objects, the like of which had never before existed in this world.

For those who live in civilized countries, and quite as much for the savages of our day, it is utterly impossible to imagine the condition of a man who had never seen a tool of any kind, and who was the first to invent one. From our birth to our death we are so completely surrounded both by human tools and the products made with them, our speech and our way of reasoning have been so entirely moulded by the materialized ideas of the generations which have preceded us, that not even the most extravagant fancy could picture for us a world which did not bear that impress of man's master-mind, the tools by which he has subjugated it.

Let us suppose that apelike beings used stones as missiles ; that one stone was split in falling, and thereby became a sharper and more useful missile. If this accident first suggested to one of these beings the idea of splitting a stone with the design to make a weapon of some sort, and if that clumsy stone implement could be discovered, it ought to have a great museum all to itself, for it would be the first step in the development of human reason, human cunning, and human handicraft.

But in all probability there have been not one, but many such stones. We know that in historic times there have been many independent and locally originated civilizations ; and this happened because there were no means of communication between the scattered tribes. By analogy it is therefore more than probable, it is almost certain, that if our ancestors were widely dispersed over the globe as most species of animals are, before having become reasoning or tool-using beings, they must have invented tools independently in different localities ; and it is possible that all tribes of the *homo sapiens* species became tool-users simultaneously.

No matter how we fancy the beginning to have taken place,

a beginning or beginnings must have been made. A being with cravings, desires, wants, different from those of all other animals, trying to satisfy these by producing with its naked hands something that did not exist in nature, invented a tool and made it to assist his hands—and in so doing that being became man.

It is truly wonderful; but what is equally wonderful is that this primeval man could not have materialized his idea before he had accumulated capital. The object for which he laboured was to satisfy his cravings; the idea of the tool being to facilitate this labour, he could not materialize it unless he had first accumulated at least a small store of food, sufficient to support him while chipping his rough stone knife.

The first man who made a stone knife was therefore also the first capitalist. Instead of continuing to produce things which he might directly consume, he saved up sufficient food to last him, while making a thing which indirectly would help him to produce more commodities in the future. Just as we speak of accumulated electricity in a battery, this primeval man accumulated labour in the rough tool which he fashioned for himself, and he placed himself in a position to do so by saving for this purpose part of what he had previously produced. He might have ceased labouring when his immediate wants had been satisfied, or he might have continued labouring in order to obtain more to eat. In any of these cases he would not have secured his tool. But he laboured sufficiently hard to get a stock of food, which not only satisfied his immediate wants, but also kept him alive while he made the tool.

It is essential to realize that the first tool could never have been made if a sufficient store had not been saved out of current production to provide the conditions for the invention. It is essential, because human labour is carried on to-day under exactly the same condition as when the first stone axe was made. If we will improve our implements we must refrain from using all the products of our labour for the immediate satisfaction of our desires, we must save some part of what we produce, and thereby accumulate the capital which is needed for obtaining better tools.

This is the house that Jack built,

This is the corn that lay in the house that Jack built,

This is the mouse that ate the corn, that lay in the house that Jack built, etc.

When preparing to write the following paragraphs, the above quoted rhyme has more than once come to my mind.

If we think of any product—the sheet of paper on which these lines are printed, for instance—and we try to make it clear to ourselves how it came into existence, and the general conditions under which it has been possible to make it, we shall find we get involved in an endless maze of happenings, each the cause or condition of the other, just as intricate as the evolution in the above-mentioned nursery rhyme, which was invented to amuse children.

Paper is nowadays made mostly from chemical and mechanical wood pulp, and the pulp again is manufactured from wood. We will assume that this paper was made of Norwegian pulp. To start at the very beginning: at some time in the autumn the forest owner sent his hewers away to the forest to fell the necessary trees. These men could not live in a cold climate like ours without houses; the latter, therefore, must have been previously built and furnished, as an indispensable condition of beginning the work of felling the trees. The men must also dress themselves, when rising, and eat their breakfast before leaving for the forest.

Each part of the house, the clothes, and the food have a long history. The nails for instance, with which the house was built, have required the establishment of a nail works. The labourers who made the nails had their houses, clothes, and food like the timber hewers. Nails could not have been produced if there had not been blast furnaces in operation; and iron mines must have been previously opened to get the ore, with coal mines to get the coke. Ships must have been built, and coffee plantations have been laid out in Brazil or some other over-sea country to supply the hot and fragrant drink, of which the hewers partook before setting out for their day's labour; and the very match which they use, without offering it a thought, to light their pipe, is the outcome of a most wonderful industrial organization. The matches are sold very cheaply. They are made of aspen wood from Russia, chemicals from highly technical English or German chemical works, and sulphur from Italy. They could not have been produced at all if the science of chemistry had not been developed; and this indispensable necessity of our every-day

life, the match, would not have been obtainable by the poorest tramp, if technical skill had not placed at the disposal of the match manufacturers machines of strange perfection.

It is almost hopeless to attempt to get at the first beginning in any analysis of the human production as it is carried on to-day. It is impossible to imagine the production of the smallest and simplest object which we take in our hands, except with the assistance of a limitless chain of previous productive activities, each of which was again based upon an equally limitless chain of preceding productions. When we study the conditions of human productive labour from this point of view, we might be inclined to consider ourselves as standing on the top of a pyramid, the bases of which are ever widening, as we delve further and further down through past ages. But this metaphor would be quite misleading. We are standing on the shoulders of all the generations, which have gone before us, it is true, and the work of to-day would be unthinkable except as a result of the work of yesterday and of all previous days; but our basis of productive activity is constantly widening with progressive evolution, because production is constantly being both extended and intensified. If we go backwards in history, we shall find that instead of widening, the basis of production increasingly narrows.

Entirely new productive ideas have from time to time been created; and when once materialized these ideas have, as previously remarked, lived their own life independently of their creators, because they have stimulated others to imitation. Such imitations can never be quite exact. And frequently new productive ideas have come about accidentally by a great number of imperceptible variations in the successive repetitions of the object in which the original idea was embodied. The history of art offers many illustrations of this tendency of small variations to cumulate into a more or less complete change of the original idea. At other times variations, amounting almost to entirely new ideas, have, however, also been introduced by design.

When man's brain had been gradually filled with ideas, it happened occasionally that one man, more imaginative than his fellows, combined two or more productive ideas, and, by so doing, created an absolutely new productive idea, which,

on being materialized, lifted mankind to a higher plane of productive ability than before. An instance, familiar to us all, of such a combination leading to a new idea of a higher order, is the railway engine. Steam engines had been used for a considerable time in mines, rail-tracks had also been used to facilitate the transport of horse-driven cars, before Stephenson's first engine was evolved. The combination of these two ideas: the steam engine and the rail-track, and the simultaneous perfection of the engine, gave to the world a means of communication which has completely revolutionized human conditions in the course of less than one hundred years.

The productive capacity of man being limited by his tools, and his leisure for making experiments being limited by his production, it follows that the evolution of pure, i.e. not immediately productive ideas, of his intelligence, and of his knowledge of nature must necessarily have been extremely slow, before the metals had been discovered and had come into general use. From that period onwards, progress, although interrupted by ruinous ethnical convulsions, has been more and more rapid, particularly during the Græco-Roman period, and during the last two hundred years.

But the fundamental productive ideas had already been created by the Stone Age man, because he had invented tools, clothes, the cultivation of cereals, and the domestication of animals, house-building, etc. Each new idea which has been created and materialized has made the basis of human productive activity broader and more varied; and this widening has continued, and will continue, as long as the world continues to be peopled by man. The conditions under which we moderns live and produce are therefore the result of all the productive ideas which have been created and materialized by man before us. If we go as far back in history as it is possible to discern dimly, and if we supplement historical research by a close study of the antiquities left by prehistoric man, we shall find the productive basis continually contracting; but, like that of to-day, it always rests upon the achievements of previous generations. Thus we return to what has been said before, that the first being who invented the first tool to satisfy his desires for something which did not exist in nature,

was the first man. Through an immeasurably long time, and by an unbroken chain, linking us to him, evolution has carried us to the immensely varied conditions under which we produce to-day. From these we could no more emancipate ourselves than we could undo the influence which the past productive evolution of our race with its many ideas has exercised upon human intelligence.

Stuart Mill says in *Principles of Political Economy*: "The requisites of production are two: labour and appropriate natural objects. Labour is either bodily or mental, or, to express the distinction more comprehensively, either muscular or nervous; and it is necessary to include in the idea, not solely the exertion itself, but all feelings of a disagreeable kind, all bodily inconvenience or mental annoyance, connected with the employment of one's thoughts, or muscles, or both, in a particular occupation. . . .

"If we examine any case of what is called the action of man upon nature, we shall find that the powers of nature, or in other words the properties of matter, do all the work, when once objects are put into the right position. This one operation of putting things into fit places for being acted upon by their own internal forces, and by those residing in other natural objects, is all that man does, or can do, with matter. He only moves one thing to or from another. . . . He has no other means of acting on matter than by moving it. Motion and resistance to motion are the only things which his muscles are constructed for. . . . But this is enough to have given all the command which mankind have acquired over natural forces immeasurably more powerful than themselves; a command which, great as it is already, is without doubt destined to become indefinitely greater. He exerts this power either by availing himself of natural forces in existence, or by arranging objects in those mixtures and combinations by which natural forces are generated; as when, by putting a lighted match to fuel, and water into a boiler over it, he generates the expansive force of steam, a power which has been made so largely available for the attainment of human purposes.

"Labour, then, in the physical world, is always and solely employed in putting objects in motion; the properties of

matter, the laws of nature, do the rest. The skill and ingenuity of human beings are chiefly exercised in discovering movements, practicable by their powers, and capable of bringing about the effects which they desire. But, while movement is the only effect which man can immediately and directly produce by his muscles, it is not necessary that he should produce directly by them all the movements which he requires. . . .”

This definition of human labour, once stated, is self-evident. But quite different and erroneous opinions had previously been held. It is remarkable, that starting from this definition, Stuart Mill did not subject labour to a thoroughgoing mechanical analysis, and so far as I know this has not yet been done.

As production consists in putting things into fit places for being acted upon by their own internal forces, we may consider the human body as a source of power; the combined muscular and nervous exertion which is expended by man is the labour, and the movement of the things which is effected to put them in the fit places is the work done. These three categories: the human body as a source of power, the labour, and the resulting work, may be reduced, like other manifestations of power, to $\text{kg.} \times \text{metre.}^1$

Horses differ very considerably in their strength; but in physical science horse-power (H.P.) has been, rather arbitrarily, fixed as a power equal to lifting 75 $\text{kg.} \times \text{metre}$ per second. Similarly, men vary in regard to their strength and physical endurance, but it would be useful to agree upon a certain sum of $\text{kg.} \times \text{metre}$ per second as the measure of an average man-power (M.P.), corresponding to a certain percentage of a H.P.

Considered as a power engine and instrument for causing motions in matter, the human body is a splendid mechanism. The power of the steam engine is derived from the calories of the fuel; the human energy is in a similar way derived from the calories of our food. Just as some of the fuel is consumed in the process of combustion, part of our food is consumed in the process of digestion.

But here the analogy between the engine, or the lifeless

¹ The terms kilogramme, metre, and kilogram-metre (kg.m.) are so generally used in scientific circles that there seems no purpose in changing them into English units. [Trs.]

mechanism, and the living organism ends. The machine is practically unchanged after a day's work, and what wear and tear there is, at any rate, is not made good by a part of the fuel; the organism, on the other hand, is continually changing, and a large part of our food is required for the physiological process of renewing the waste, and maintaining the body in a strong and healthy condition. After the digestive and recuperative processes have been provided for, the balance of the calories of the food is the source of our energy. This balance is the *M.P.* or the strength of man, available to do labour.

Men differ like other animals in strength, because they are born physically different; some are big and strongly built, others are small and weak. But their strength may also vary, because one man may have at his disposal plenty of food, leaving him with a big balance of energy-producing calories, while another man may be so underfed that his body is wasted.

The animal, and therefore also the human body may, not inaptly, be compared with an electric accumulator. When this has been charged, the electric energy may be taken out again—rapidly or slowly—but one cannot get more energy out of it than that with which it was charged. The body is discharged of its energy every twenty-four hours, and recharged during the hours of sleep—a mysterious physiological process, the nature of which is practically unknown.

But our strength or the *M.P.* is not quite analogous with an accumulator battery, because it is not an absolutely fixed quantity; it lies in our power gradually to increase it within certain limits by suitable training; inversely, we may impair our strength and health by debauchery and idleness.

Every morning, when we rise from our night's sleep, we have at our disposal the sum of energy with which our body has been charged; it is a very peculiar thing, that we become apparently equally sleepy and tired by the end of the day whether we have laboured hard or have been lazy, doing nothing, as the saying is. This observation proves that by far the greater part of the calories of our food is required for maintaining the physiological processes which continually go on in the body. But it also proves that productive labour need not fatigue us unduly, provided it be not overdone.

The live power of an engine—i.e. the piston of a steam engine or the driving shaft of a turbine—can seldom be used directly; it must generally be geared, and it often passes through a number of wheels or other gearings before those movements of matter are obtained for which the engine is constructed. This gearing or transformation causes a certain loss of power. The energy of the human body must set the muscles in motion, and it is only through the movements of the muscles of our members, hands, feet, and fingers, that we are able to subject matter outside of ourselves to the motive power of our energy. Just as the gearing of a machine absorbs power, so the movements of our members and other muscles absorb a part of our energy, and only that sum of energy, which is actually transferred from our body to the matter, upon which we wish to act, is productive, while the entire effort, the entire muscular and nervous exertion, is the labour. The proportion between the kg.m. of the total effort, and the kg.m. motive force transferred to matter, gives the rate of the efficiency of labour.

This rate varies considerably, and it will be more closely analysed when we come to discuss the relation between wages and profit. Here we will give only a few illustrations to make it perfectly clear what is meant.

Let us suppose that a bricklayer's assistant, who weighs 75 kg., carries bricks on a ladder to the place of work, say, 10 metres above the ground. If he carries up a load of 40 kg., 50 kg., or 60 kg. respectively, the labour done in each case will be :

$75 + 40 \times 10 = 1,150$ kg.m., while the work done will be $40 \times 10 = 400$ kg.m.

$75 + 50 \times 10 = 1,250$ kg.m., while the work done will be $50 \times 10 = 500$ kg.m.

$75 + 60 \times 10 = 1,350$ kg.m., while the work done will be $60 \times 10 = 600$ kg.m.

In the first case the rate of efficiency is 34·8 per cent., in the second 40, and in the third 44·4.

In this case the higher rate of efficiency is due to a greater sum of energy being expended. But in many kinds of labour the rate of efficiency depends upon not making the movements

of the members or muscles greater than absolutely necessary for obtaining the end in view.

Because men vary in strength, one man may have a greater sum of energy, measured in potential $\text{kg.} \times \text{m.}$, at his disposal than another man; and because men vary in the rate of the efficiency of their labour, one man transfers with the same labour a greater sum of $\text{kg.} \times \text{m.}$ energy to matter.

From these causes in combination there results a great difference in the $\text{kg.} \times \text{m.}$ value of a day's labour of different men.

The work done, or the operation of "putting things into fit places for being acted upon by their own internal forces and by those residing in other natural objects" has, on the other hand, always and everywhere the same value, expressed in $\text{kg.} \times \text{m.}$ To build a brick wall we place one brick on the top of another, with mortar between them. When finished, it represents so many kg.m. work, as we find when we multiply the weight of the bricks with the height to which each of them has been lifted. This sum is the same, whether we examine a Roman or a modern wall, and it makes no difference whether the wall is built in America or in Europe. But the same work, done inefficiently, costs more labour than when done energetically. Let us suppose that 10,000 bricks, weighing 3 kg. each, have been laid in a tier at a height of 10 m. from the ground. If the bricklayer's assistants carry 13 bricks, weighing about 40 kg. , each time they ascend the ladder, they must make 769 turns; if they take 16 bricks, 625 turns, and, with 20 bricks each time, 500 turns suffice. This difference in labour does not, however, show itself in the wall; it does not become stronger or more useful because of this additional labour. All that is required is, that the bricks have been "placed in the right position," so that they may be acted upon by their mutual cohesion and the law of gravitation, and it is immaterial how much or how little labour it may have cost to place them there; but this labour must, as long as the work has to be done by human muscular energy, no matter how done, yield so many kg.m. of energy transferred from our body to matter, as is necessary for moving them to the required place or places.

In many, perhaps in most, kinds of productive activity it is difficult, or sometimes almost impossible, to measure exactly in kg.m. the work done, as we could do with the wall, because production so frequently consists in moving exceedingly small quantities of matter over exceedingly small distances.

In sewing, for instance, stitches are made by moving the thread by the use of a needle, first through the cloth and then backwards through it again, each stitch forming a tiny circle. If this circle has a circumference of $\cdot 0001$ m. and if the weight of the thread in a stitch is $\cdot 0001$ kg., the work done will be only $\cdot 0000001$ kg.m. or $\frac{1}{1000000}$ of a kg. \times m. To do this work with the hand involves, in addition to the labour of threading the needle, the labour of moving the arm to the length of the thread, say 50 to 60 cm., and a minimum energy for holding the needle with the fingers. Let us suppose that the arm weighs 2 kg., but that the energy required for merely bending the arm on the joint is only one-tenth of what would be needed for lifting 2 kg. \times 50 cm. On this supposition the indispensable labour for making a stitch is $\frac{2 \text{ kg.} \times 0\cdot 50 \text{ m.}}{10}$ or only $\cdot 01$ kg.m. ; but, though small, it is nevertheless 100,000 times greater than the kg.m. value of the resulting work.

Yet precisely in such work as sewing we must bear in mind the definition which Stuart Mill gave of labour that "it is necessary to include in the idea, not solely the exertion itself, but all feelings of a disagreeable kind, all bodily inconvenience or mental annoyance, connected with the employment of one's thoughts, or muscles, or both, in a particular occupation." The sempstress must sit in an awkward position, and must frequently strain her eyes to follow the needle, and her mind must be concentrated upon her work, all of which means the expenditure of energy, by which the disproportion between labour and the resulting work is still more increased, no matter how efficiently she does her work.

As a contrast, let us take the labour of the attendant on an electric crane, which discharges cargo from a vessel. Let us suppose that the crane takes in one lift a ton or 1,000 kg. from the hold, say 7 metres below the quay, depositing the burden 10 metres from the ship's side. Here the work executed is $1,000 \text{ kg.} \times 7 \text{ m.} \times 10 \text{ m.}$ or 70,000 kg.m. The

attendant only shifts the handle, which sets the machinery in motion. He must, to do this, move his arm and the handle say 50 cm., or just as large a movement as the sempstress did in making a stitch. Owing to the resistance of the handle, the energy which he must expend is somewhat greater than that of the sempstress when making a stitch, it may be as much as 1 kg.m.; and he must use his eyes attentively to watch the signals and what is going on on the quay. He may, therefore, like the sempstress, perform his labour with a greater or smaller degree of efficiency, but what a difference in the result of these two operations, which both require the use of a very small sum of muscular energy!

When to produce is to "move things into fit places for being acted upon by the forces of labour," the work to be done depends upon the weight of the things which have to be moved by human labour, and the distances over which they must pass, both of which are determined by the method of production.

The labour employed must be sufficient to cause these motions, that is to say, a force of the requisite kg.m. energy must be transferred to matter. Labour, differing in all other respects, is commensurable in this one thing, that it results in the transfer of energy, and an equal sum of transferred muscular energy has the same mechanical value, irrespective of time or place. When 1 kg. is to be lifted by human muscles 1 m., the effort must be strong enough to do this work.

Let us assume that a prehistoric man of average strength produced, without any tools whatever, in a given time one of a commodity *A*. In this case the labour was equal to the work, for when it had all been done exclusively by human muscles, unaided by any implements, the force transferred from the body of the labourer to matter must be equal to the weight of the matter, multiplied by the distances of the required motions. This labour, necessary for the production of 1 *A*, we will call 100, and we will say that to produce 1 *A* costs 100 labour units. A strong and energetic man would produce a greater quantity than a weak and lazy one, in prehistoric times just as to-day; and an efficient labourer would transfer to matter with the same effort a greater sum

of energy than an inefficient one. But if we wish to understand the evolution by which labour has been saved through successive improvements of the methods, we must focus our attention on this fact, that 100 labour represents a given kg.m. sum of human muscular energy which must be transferred to matter to produce 1 *A*.

The expression, saving of labour, means that the same kg.m. sum of labour yields, through the use of a better method of production, a greater quantity of product; when 100 labour units yield, for instance, 2 *A* instead of 1 *A*, the labour cost of 1 *A* has been reduced to 50. The labourer need not work harder, or more efficiently, but he produces more, because only one half the sum of kg.m. labour is required to move things into fit places to produce 1 *A*.

Saving of labour is always due: (1) either to the use of tools, which make human labour more effective; (2) the substitution of natural powers to human energy for moving objects into fit places; (3) the invention of new products which cost less labour for obtaining the same purpose.

A young tree, or a bough of a tree, may be broken with our bare hands, but if we use an axe or a knife, a small part of the energy, which was needed for breaking the tree, is sufficient to cut it, because it is the property of an axe or a knife to cut through soft wood by its shape and hardness. The use of the tool greatly increases the effectivity of the labour, and the same kg.m. energy transferred to matter produces a greater result—more pieces of young trees.

If prehistoric man wanted burdens transported over long distances, he had to carry them on his back. At the utmost he might thus transport 75 to 80 kg. over a distance of 25 to 30 km. in a day. To-day we place the goods in a railway truck, and transport in one train perhaps 100 tons in 24 hours 400 to 500 km. The work done, in both cases, is the weight of the goods multiplied by the distances over which they are transported, but the labour cost has been reduced to a mere fraction, because instead of human energy to do the work, we employ the power of steam. In the train transport the human labour has been practically reduced to replenishing the coals in the fire of the engine.

The prehistoric man had to rub a hard and a soft piece of wood against each other to obtain fire; we use for the same purpose a match which costs a fraction of a penny.

The labour cost of production has been reduced by an endless number of changes and improvements of the methods of production, until it has become to-day only an infinitely small fraction of what it was at its maximum when no tools had yet been invented. Each new saving, or the gain due to the latest improvement, is to be measured by a comparison not with the original maximum cost, but with the cost of the previous, or the next best method. Each new reduction of the cost of labour is a further reduction of a previously reduced sum of labour, which is necessary for the production of a given quantity of a commodity.

Saving of labour has been the result of the imagination of man, which has made it possible to invent improved methods of production, and of man's willingness to accumulate the capital necessary for the materialization of these inventions.

If prehistoric man had to use one day's labour, which we will call 100 labour units, to break with his bare hands a certain quantity of young trees, which we will call 1 *A*, and he could obtain 2 *A* with the use of a roughly-chipped stone axe, the labour cost of 1 *A* was reduced, with the assistance of this simple tool, to 50. If we further assume that it did not require more than 100 labour to shape this rough tool, the capital was also 100, and we may make the following comparison:

Capital	Labour spent	Production	Cost of 1 <i>A</i>	Saving on 100 labour	Saving in 300 days
—	100	1 <i>A</i>	100	—	—
100	100	2 <i>A</i>	50	100	30,000

If 2 *A* were produced without the use of the roughly-shaped axe, it would have cost 200 labour units to produce them; each time the sum of 100 labour is expended, in conjunction with the capital invested in this tool, there is therefore a saving of 100 labour units, and if the tool lasts a year the total gain in a year is 30,000 labour units, or 300 times as much as it had cost to make this tool.

The amount of capital required for realizing a given method of production should not be measured in pounds, shillings, and

pence ; but the labour cost of the tools, and of the other "means of production" in which the capital is invested, should be measured, if possible, by the sum of labour which is used in conjunction with these means of production.

No matter how the capital is invested or what the tools are, only a given number of labourers can simultaneously be employed in a given productive operation, and in conjunction with a given sum of capital. An axe can only be used by one man at a time ; in a factory, which is a complicated tool, only a given number of labourers can work, dependent upon its size and the arrangements of the factory. The axe or the factory with the necessary raw materials have cost a given sum of labour to produce ; one labourer, using the axe, or all the labourers employed in the factory, yield in a day a given sum of labour. The sum of capital invested in the tool or the factory, divided by the number of labourers employed, gives the rate of capitalization, compared with the sum of labour which is daily yielded by each individual labourer. At one and the same place and time the rate of capitalization in various branches of industry may approximately be found by comparing the money value of the capital invested with the number of labourers. In engineering works the capitalization per labourer is from £56 to £112, while in cellulose mills the capitalization is about £560 per labourer. But to make these examples complete it would be necessary to be able to compare the sum of labour, measured in kg.m., actually yielded per day, respectively by the engineers and the labourers in the cellulose mill. Such a comparison is, however, not possible, because the work done in different productive operations varies so much in the character of the movements which are required that it is impossible to determine whether the sum of efficient labour yielded, or the kg.m. of energy transferred to matter by one set of labourers, is equal to, greater, or smaller than what another set of labourers yield ; and when it is impossible to determine to-day, even approximately, the labour cost of capital, and the sum of labour which is used daily in conjunction with the capital, it must be apparent that any attempt to discover what the actual relation between capital and labour, or the rate of capitalization, has been in the past, must be perfectly useless.

But this much we do know, that the increase of the productivity of human labour has been accompanied by, and has been due to the employment of constantly more and more circuitous methods of production, and each increase of the productive detour has involved the necessity of having at disposal a larger capital.

The paper on which these sentences are printed is manufactured from cellulose. The logs, of which cellulose is made, are cut in the autumn, they are floated down the river in the spring, and received at the cellulose mill by midsummer. The mills store a stock of logs sufficient for one year to get a supply of perfectly dry wood. They do not begin to use the logs before a year has passed, and a new winter's supply of logs has been received. Consequently the particular log from which this paper has been manufactured may have been cut down at least a year and a half and perhaps two years ago. The log-cutter received his money from the forest owner, who was in turn paid by the cellulose maker. When the cellulose maker delivers a parcel of cellulose to the paper mill, and gets his payment, his outlay is refunded both for the raw material and for the wages paid to the labourers in the cellulose mill. The paper maker sells his product to the publisher, who not only pays for the paper, but also the printer's and the book-binder's bill; when a purchaser buys a copy of the book, the purchase sum refunds a share of the capital outlay of all those who have been engaged in the numerous processes which together form the productive chain that has resulted in this book being ready for the use of the reader.

The characteristic of the circuitous or indirect productive method is, that the intermediary products are mostly non-consumable. The pulp wood might, of course, be used as fire-wood, but as a matter of fact, it is never, or hardly ever, used in that manner. Cellulose is practically useless except as the raw material for paper-making. Printing paper might conceivably be used for writing or wrapping purposes; but it is really not made for any other purpose than to be printed upon, and the printed sheets would not be of much use to anybody if they had not been bound into books by the bookbinder.

The workmen who are engaged in the various branches of industry, and without whose labour modern printed books

could not be made, must each day have consumable commodities for the satisfaction of their needs. If they had not these at their disposal they would be unable to continue their labour. Indirect production, which may take years before a consumable commodity can be produced, would be impossible if sufficient labour had not been accumulated in consumable commodities to support the labourers from the moment when the indirect production begins until the finished and consumable article pays its part of the entire chain of the precedent circuitous processes. The requisite capital for the whole of the processes is an accumulation of consumable commodities, equal to the quantity of such commodities which might have been produced directly by the labourers during the time in which they have been occupied in making the tools and all the non-consumable products of the indirect method. Also the labour cost of the final product is that fraction of the labour cost of all the preceding processes, which justly falls on each part of the finished and consumable commodity.

This book, which is set up with modern type and printed in a modern press, and bound with modern tools, can be sold for much less than it would have cost if it had been produced on papyrus and written with a pen. A part of the labour of the log-hewer, of the river labourers who floated the logs, of the labourers in the cellulose mill and in the paper mill, of the compositors, the bookbinders, and a number of others who have more or less indirectly contributed to the final work—a part of all these various kinds of labour are represented by this book. We cannot tell what its labour cost has been; but we know that whatever it may have been it is only a small fraction of what it would have cost if it had not been made in this circuitous and very indirect manner.

The indirect methods of production have only gradually become as complicated as they are to-day, not only because they have been invented slowly and step by step, but also because the production of non-consumable commodities by indirect methods could not be extended beyond the capital accumulation of the world at each stage of the industrial evolution.

The object of human labour is to produce consumable

commodities for the satisfaction of man's wants and desires. Indirect production increases to a growing extent the productivity of labour by reducing the labour cost of a given quantity of the consumable commodity, but the rate of capitalization increases more rapidly than the labour cost is reduced.

The improvements of productive methods have on some occasions been great, and on other occasions small. To simplify a schematic view of the productive evolution, we will, however, assume that each new improvement has resulted in the saving of half the cost of labour that was necessary under the previous method, or that the same sum of labour expended has always produced twice the quantity obtainable with the previous method. We will let *A* stand for a given quantity of commodities in general.

To simplify still more the schematic view, we will suppose that each new improvement of the method which has resulted in reducing the cost of labour by one-half, has necessitated the employment of three times greater capital per labourer than sufficed with the previous method.

This is, of course, assuming a rate of capitalization which is quite arbitrary, and it has been adopted because it makes calculation easy. But the rate of capitalization has been constantly growing, and, in the absence of any facts upon which we may form an estimate of what the capitalization has been in various epochs of the productive evolution, this supposition will do as well as any other to show the tendency.

Capital per labourer	Labour per day	Production	Labour cost per <i>A</i>	Saving per 1 <i>A</i>	Saving on 100 labour	Saving per 300 days	Rate of saving percentage of capital per annum	Stage of evolution
—	100	1 <i>A</i>	100	—	—	—	—	—
100	100	2 <i>A</i>	50	50	100	30,000	30,000	1
300	100	4 <i>A</i>	25	25	100	30,000	10,000	2
900	100	8 <i>A</i>	12.5	12.5	100	30,000	3,333	3
2,700	100	16 <i>A</i>	6.25	6.25	100	30,000	1,111	4
8,100	100	32 <i>A</i>	3.12	3.12	100	30,000	370	5
24,300	100	64 <i>A</i>	1.56	1.56	100	30,000	123	6
72,900	100	128 <i>A</i>	0.78	0.78	100	30,000	41	7
218,700	100	256 <i>A</i>	0.39	0.39	100	30,000	13.7	8
656,100	100	512 <i>A</i>	0.195	0.195	100	30,000	4.5	9

The reader will probably at first sight find this table so fantastic that he will be inclined to consider it quite nonsensical. But if he will take the trouble to study the figures, and reflect what they stand for, I believe that he will come to the conclusion that they convey a very reasonable idea.

100 labour represent a given sum of human muscular energy (x kg. \times m.) transferred to matter for productive purposes. There is nothing absurd in the supposition that this sum of labour actually expended "to move things into fit places for being acted upon by their internal forces or the forces residing in other things" results, with modern methods of production, in the production of 512 A or more, against only 1 A , which prehistoric man could produce without tools with the same sum of energy transferred to matter. Also if the production is 512 times larger, and we call the cost of 1 A without any tools 100 labour, the cost of 1 A will have been reduced to .0195 labour.

To obtain this saving of labour the capital invested in successive productive methods has been constantly increased, until it has become at the present moment enormous. Or, to put the same thing in other words, in order to be able to produce the consumable commodities which he desires, with a smaller labour cost, man has expended more and more labour on the production of commodities which he consumes during the time when he is occupied in the production of the non-consumable products of the indirect methods of production.

To take one example which is easily stated: the cost of transport was at its maximum when done entirely by human labour. In comparison railway transport costs very little; but what capital has been invested to make modern railway service possible!

It is, however, immaterial for the conclusion which I am going to draw from the table what the increase of the rate of capitalization has actually been, if only the broad fact is accepted that it increases, and is much higher now than in past ages.

The gain, or the saving of labour which can be obtained by introducing new and improved methods of production, is only the new saving of labour compared with the labour

cost of the previous method, and it will be observed that this gain—on the supposition upon which the table is constructed—always remains the same, when the same sum of labour is yielded by the labourer in conjunction with the capital. Disregarding for the moment the fact that the material objects in which the capital is invested—tools, buildings, etc.—are gradually worn out, it is evident that the gain or the saving of labour which may be achieved during a year of 300 days from the employment of capital in new and improved methods of production, in conjunction with the same sum of labour, must be a rapidly sinking percentage on the capital when the capitalization constantly increases.

Indirect or circuitous methods of production, requiring relatively large capital, are not a comparatively new and modern feature in the evolution of mankind. Prior to the accidental or intentional invention of bronze, the Stone Age man must have opened copper and tin mines, and as copper and tin ores are not generally found at the same place, a certain development of trade and navigation must have been reached before it became possible to produce bronze by the mixture of the two metals. It must have taken a very long time, from the time when the mining of the ores was begun, until a finished bronze weapon or other implement was ready for use ; and a considerable capital must have been accumulated to support the labourers during the long time in which they produced only those non-consumable things, the ores, and the two, in their unmixed state, almost useless metals.

Capital cannot be accumulated in any other way than by saving a part of the current production of consumable commodities, and a glance at the table will show that in the early stages of evolution the productivity of labour was extremely small. The prospect of the enormous gain which each new improvement offered in the beginning of productive evolution, and the relatively small accumulations of capital which were needed to realize it, must have been sufficient temptation to induce prehistoric man to submit to great privations in order to obtain the means of saving his labour. But capital could only accumulate slowly at the beginning of human evolution, because the quantity of consumable

commodities which were produced was not great enough to permit a large accumulation of commodities for use during indirect production.

During a long time in the infancy of the human race our ancestors probably lived in a communistic society, in which the tools which they gradually acquired, and the products of the daily toil, were the property of the entire tribe or family. But at the period when history begins we find that everywhere a few were possessed of wealth, and the masses were poor and compelled to work for the benefit of the rich, partly as free individuals, partly as slaves.

Thralldom existed in the primitive Greek society of which Homer sings, and in the simple agricultural communities of Italy before Rome was founded, and there are many traces of slavery in the Bible. In Egypt and the ancient Babylonian and Assyrian kingdoms the majority of the population was probably more or less in a condition of serfdom. It is certain that slavery was the basis of the Phœnician, and afterwards of the Carthaginian trading and industrial cities, and slavery was the curse of the civilization of the Roman Empire, contributing probably more than any other single cause to its final fall.

The ancient Norwegians and the Anglo-Saxons and other Germanic peoples also kept thralls, and although slavery never attained such dimensions as in the Græco-Roman era, the difference in wealth and social standing between the great landowners and the other freemen was so great that it paved the way for the bondage which became the lot of the majority of the agricultural population at the beginning of the Middle Ages in almost all the countries of Western Europe.

The past civilizations, of which history has kept a record, have therefore all been built up on a system entirely different from the one which exists in modern society, where capital must enlist in its services free labourers by offering them a sufficiently attractive wage. In the Græco-Roman world the poor freemen had not only to suffer from the actual competition of slave-produced goods, but the curse of slavery was that all manual labour was held in contempt. The same prejudice exists to-day in countries where coloured labourers

are used for doing rough work. As a consequence the proud citizens of Rome finally became a worthless, lazy proletariat, dependent upon the public corn supply.

When a prehistoric man had made for himself a stone axe which he retained for his own use, he was himself the capitalist, and reaped the whole benefit of a larger production. But the final achievement of the Stone Age, the invention and production of bronze tools, would not have become possible if comparatively great wealth had not been accumulated. The large capital which was required for such protracted undertakings as mines could not be accumulated by a single person who saved a part of his own production of consumable commodities. This great wealth could only be formed as the result of a slow social process. We do not know under what forms of joint ownership the earliest mines were worked. But in historical times stone quarries and mines were generally worked by the Ancients with slave labour for the sake of the State, or of rich companies which leased them from the State.

Between these two extremes—a simple stone axe made, owned, and used by a single prehistoric man on the one side, and on the other side costly copper and tin mines, employing many labourers, and worked on behalf of companies or the State—lies the remarkable evolution through which mankind had passed during the Stone Age. We shall never know at what stage of evolution the differentiation began, when some saved a part of what they had produced, accumulating capital and thus becoming possessed of wealth, while others consumed each day all that which they had produced, and therefore remained poor. Human nature was probably in the Stone Age the same as it is to-day: a few people are economical, the majority are reckless spendthrifts. Owing to the enormous saving of labour which was obtained with the first improvements of the methods of production, the possessor of the moderate capital which was sufficient to introduce them gained an immense advantage over the rest of the tribe, who could not afford the new and excellent tools. Among these advantages not the least important was this, that having once accumulated by his savings this small capital, he might continue accumulating wealth without great hardship, be-

cause his production of consumable commodities was so much greater than that of those who had not yet got any tools. To-day the capitalist has also the advantage over the poor man, that he may accumulate more capital without any feeling of hardship, while the poor man must submit to privations if he wishes to save only a small sum. But the difference in favour of the capitalist was very much greater in the beginning of the Stone Age than it is to-day.

Technical progress must have continued a long time, and passed through many stages of gradual improvements of the tools with a relatively direct production, before it became possible to invent more circuitous and indirect methods of production, and before the large capital could have been accumulated which was necessary for introducing these methods.

But at some stage of evolution this change took place; and because the indirect production generally requires the co-operation of a great number of labourers in conjunction with large capital, the employment of hired labourers began simultaneously with the introduction of such methods, whereas the one man who was the owner of an axe might personally work with his own capital for his own account, and generally did work so.

Let us see if we can discover the principle upon which the wage, or the payment to the hired labourers, was fixed. We will use for this purpose the schematic table of the saving of labour by the use of the successively improved methods on page 30.

We will suppose that the first three stages of improvement had been reached by people who had personally accumulated the capital required for the better tools, and that they had used these tools in their work for the direct satisfaction of their desires with the products of their own hands. At the third stage 100 labour produced with the improved tools 8 *A* commodity.

We will further assume that the next great improvement of the productive method, with a capitalization of 2,700 per labourer, involved the use of so much capital and such protracted preparations that it was beyond the savings of the majority of the tribe.

One man, or a few men, had, however, accumulated enough capital to start this new method of production, and they asked the other members of the tribe to help them with the labour, offering to pay them for their service. I will leave aside for the moment the question of compulsory or slave labour, of which I shall speak afterwards. If the other members of the tribe were at liberty to accept or refuse the offer, what would be the payment which they would demand? They are required to give their labour, and to work in conjunction with the new capital. When their labour has the kg.m. value of 100 transferred upon matter, they can produce with the same, when using their own tools, 8 A commodity. The object of their previous work has been to get these 8 A commodities; evidently they will not give their labour for hire to do a different kind of work with another set of tools unless they obtain a wage which is at least equal to the price at which they might sell their product 8 A commodities, or for which they might buy the same of others. Why should they undertake to work for a smaller compensation than they could obtain by continuing to produce by their old method? But the labour cost of 8 A commodity was the same as 4 A with the previous method, or 2 A with the first tool, or 1 A without any tool whatever. Consequently, the wage will be fixed at the price at which the product of 100 labour could be sold at a period when it was produced without any help of any tool whatever. In the beginning, before tools were introduced, the labour cost of A commodity was at its maximum, and the unit of wages is consequently the maximum cost price of the small quantity of 1 A commodity, which could be produced with 100 labour without any tools. *This unit is always and everywhere the same.*

The capitalist must pay to the labourers for each 100 labour the selling price of what this sum of labour produced with the last method which is carried on by the labourer with his own tools and on his own account; and as the labour cost is 100, the selling price of the product will also be 100. In the same currency in which the products are bought and sold the capitalist must pay as wages 100 each time the labourers yield 100 labour.

Our supposition is, that each new method leads to double

production with the same labour. The capitalist pays for 100 labour, but he gets by his new method 16 *A* instead of 8 *A*, and the labour cost is reduced from 12·5 to 6·25 per 1 *A*. If the capitalist uses the whole of the production personally, he gains 6·25 per 1 *A*, or 100 each time the labourers yield 100 labour. But the large capital which is invested, and the large numbers of labourers who are employed, result in a very large production, and as a rule the capitalist cannot personally use the whole of the output; he must sell a part of it. What price can he obtain? If he demands 12·5 per 1 *A*, the other members of the tribe will have no advantage in buying from him, because it does not cost them more to continue producing with their old method. If the capitalist sells at 6·25 per 1 *A*, he gains nothing, getting only as much back as he must pay in wages. The capitalist must try to stimulate the consumption of the commodity *A* by offering his goods for less than the previous labour cost, and he tries to gain as much as possible; as a rule it may be supposed that the selling price will oscillate at about half the difference between the labour cost of the new and of the old method; that is to say, in this case, at 9·37 per 1 *A*. On this supposition the capitalist will produce with his hired labour in conjunction with his capital 16 *A* :

Costing	100
Which he sells at 9·375 per 1 <i>A</i>	= 150
Making a profit of	<u>50</u>

The meaning of these figures is this :

When the labourers receive as wage the selling price of what they could have produced for themselves with the less perfect method, and when the capitalist sells the product at a price half-way between the labour cost of his better method and the previous method, he makes a profit of 50 per cent. on the wage which he pays to his labourers. The profit on capital is a part of the labour cost which is saved by the use of the capital. If the labourers use their wage 100 to buy the commodities of the capitalist at the reduced price, instead of continuing to produce the same personally, they get 10·67 *A* instead of only 8 *A*, while the capitalist retains for himself 5·33 *A*, or the selling price of the same, as his profit. A profit

of 50 per day is 15,000 per year of 300 days, or equal to 555 per cent. per annum on a capital of 2,700.

Let us go one step further ; a newer and still better process is invented, and although it requires a capitalization of 8,100, the capital is found, and a sufficient number of labourers are engaged at the same wage of 100 for each 100 labour which they yield. The production is increased to 32 *A*, at a labour cost of 3·125 per 1 *A*. When this entire production is sold at 4·68 per 1 *A*, the profit is the same as in the case of the previous method, but 15,000 profit per annum is only equal to 185 per cent. per annum on a capital of 8,100, while the labourers, if they buy *A* commodity for their wage 100, get 21·3 *A* instead of 10·67 with the previous method, or 8 *A* when they produced this commodity directly for themselves with their own tools.

The rate of wages for each 100 labour remains the same through all succeeding improvements of production ; that is to say, the labourers are paid for a given kg.m. sum of labour in the currency in which the commodities produced with their labour are sold, the same sum which they could have obtained when working with the previous method. *The profit of the capital is a part of the saving of labour due to the improvement of the method of production, which could not have been introduced unless the capital had been available. Measured in currency, the wage for a given sum of labour always remains the same ; measured in the commodities, in the production of which the labourer takes part, the wage of a given kg.m. sum of labour constantly increases with the fall in the selling price of the commodities.*

But if the capitalization increases more rapidly than the reduction of the labour cost of production, the annual rate of profit on capital, in conjunction with an equal sum of labour, rapidly sinks.

If the capitalization increases from 8,100 to 24,300 in order to increase the production of 100 labour from 32 to 64 *A*, the profit on 100 labour of half the saving of labour would be only :

Production 64 <i>A</i> , selling at 2·34 per 1 <i>A</i>	·	150
Wages	·	100
Profit	·	50

or 15,000 per annum, equal to 61·5 per cent. on 24,300. We may think that this is a very high rate of profit ; but it would seem small in comparison with the 185 per cent. of the previous method.

The capitalists had only one means of counteracting this fall in the rate of profit : they were obliged to seek means of inducing their labourers to perform a more efficient labour, or to yield a greater kg.m. sum of labour, transferred to matter in conjunction with the capital. Now the only way of getting more efficient labour was to make it worth the while of the labourers to exert themselves more energetically. The labourer must get higher wages per day. The efficiency of labour depends, as I have previously explained, either upon doing the work more energetically, or upon making those movements of the body, of the arms, legs, or fingers, through which the human muscular energy is transmitted to matter, smaller and more purposeful. The difference between the usefulness of the work done at a complicated machine by a skilled artisan and a Sandwich islander is enormous ; not because the former is stronger than the latter, but because he has learnt to do his work more efficiently, and with the smallest possible expenditure of physical exertion.

The efficiency grows gradually with the progressive improvements in the methods of production ; it would not be possible to get the same amount of work out of a savage as from trained civilized labourers. But within certain limits it is possible to obtain an increase of the efficiency by offering an inducement in the shape of higher daily wages. The wages must be advanced first ; the efficiency increases only gradually, and for a time the cost of labour therefore becomes somewhat higher than the normal rate, but in the long run competition between the labourers forces up the average rate of efficiency to the standard rate of wages. That is to say, if one set of labourers get twice as high wages per day as another set, the former will, after a while, do twice as much kg.m. labour as the latter ; and it is useless to think one may come to understand the relation between wages, cost of labour, and profit, if one does not grasp the fact that the rate of wages for a given sum of kg.m. labour is everywhere and always the same ; or rather, it tends to uniformity, oscillating a little over and

a little under the average rate. This average is the selling price in a primitive society of the small quantity of the commodity which could be produced with this sum of labour without any tools.

For the labourer the material consideration is, how much he can earn in wages per day; for the employer who hires him, the important question is what is the labour cost per unit of production. If our early capitalist pays two wages per day instead of one, he will after a while obtain 200 instead of 100 labour. And his profit will be :

Production	$64 A \times 2 = 128 A$	$@ 2.34 =$	300	
Less wages	. . . . .		<u>200</u>	
		Profit	. . . . .	<u>100</u>

or 30,000 per annum, equal to 123 per cent. per annum instead of 61.5 per cent. on 24,300.

If we suppose that wages per day are doubled, and the sum of labour yielded increases in proportion each time a new method of production is introduced, by which half the previous labour cost is saved, we get a schematic table as on page 41.

The table supposes that at the eleventh stage of the industrial evolution the capitalization is 5,904,900; as 100 is the sum of efficient labour, or kg.m. labour, which the prehistoric man, without any tools, yielded in a day, the capitalization is 59,049 times the kg.m. value of this labour.

In the Far East a man may still be hired at a wage of $4d.$ a day, and this is much more than the first prehistoric man could have earned; even if we take $2\frac{2}{3}d.$ per day as a basis of comparison, we come to a capitalization of only £764, a rate which is considerably exceeded in many branches of modern industry. Moreover, there are many branches of European or American industry where the daily wage of skilled labour is 64 times $2\frac{2}{3}d.$, or over 14s. And although 87,670 of the commodity A is a very large quantity, it is probably not too large when it is remembered that this figure stands for what a modern skilled labourer may buy of commodities with his wages, in comparison with the quantity which the prehistoric man could produce in a day with his naked hands, and before he had as yet got his first tool.

PRODUCTION

41

Stage of evolution	Capital	Production with 100 labour	Cost of 1 A	Wage per day	Total production	Selling price per 1 A	Sales per day	Profit per day	Profit per annum	Profit per annum on capital	Wage purchases of A	Stage of evolution
—	—	1 A	100	—	1 A	100	100	—	—	—	1 A	—
1	100	2 A	50	—	2 A	50	100	—	—	—	2 A	1
2	300	4 A	25	—	4 A	25	100	—	—	—	4 A	2
3	900	8 A	12.5	—	8 A	12.5	100	—	—	—	8 A	3
4	2,700	16 A	6.25	100	16 A	9.375	150	50	15,000	555	10.6 A	4
5	8,100	32 A	3.125	100	32 A	4.68	150	50	15,000	185	21.3 A	5
6	24,300	64 A	1.56	200	128 A	2.34	300	100	30,000	123	85 A	6
7	72,900	128 A	0.78	400	512 A	1.17	600	200	60,000	82.3	341 A	7
8	218,700	256 A	0.395	800	2,048 A	0.58	1,200	400	120,000	55.0	1,377 A	8
9	656,100	512 A	0.195	1,600	8,192 A	0.292	2,400	800	240,000	36.6	5,480 A	9
10	1,968,300	1,024 A	0.098	3,200	32,768 A	0.146	4,800	1,600	480,000	24.4	21,918 A	10
11	5,904,900	2,048 A	0.049	6,400	131,072 A	0.073	9,600	3,200	960,000	16.3	87,670 A	11

The relation between capital and labour depends not only upon the rate of wage paid for the labour, but also upon the rate of profit of capital.

That the unit rate of wages is always and everywhere the same as I maintain, or rather that it tends towards uniformity, is confirmed by the experience of great international contractors, who have found that the cost of labour is everywhere about the same, although daily wages in different countries vary to a very considerable extent. I will try to prove in the chapter on wages, that where the rate of wages differs from the general unit standard, falling below or rising above it, with a corresponding variation of the cost of labour, this variation is generally compensated by a corresponding variation in the selling price of the commodities produced by such labour; when the labour cost falls below the normal, the commodities sell for less than the average price of goods manufactured on the same stage of capitalization, and inversely, when the labour cost is higher than the normal.

Slave labour costs only the sum of food, clothes, and shelter which is given to the slave, but experience of slave labour is, I believe, that in spite of severe task-masters, it is so inefficient that the cost of a given kg.m. sum of such labour is fully as high as that of free labour.

Supposing, however, that my contention is correct, that currency wages for a given kg.m. sum of labour are always the same, it remains to be considered how far the assumption that the rate of profit constantly sinks, and that wages, measured in commodities, consequently advance with succeeding improvements of the methods of production, agrees with experience.

If the saving of labour is due to improved methods of production, and if such methods cannot be introduced unless a sufficient sum of capital is accumulated, it follows that those who have either been unable or unwilling to save any part of this capital, cannot claim as their right any part of the saving. When the labourers get for their labour a wage that enables them to buy the same quantity of the commodity which they could have produced unaided by the capital, they are not worse off than before; and until society has accumu-

lated a large sum of capital it will not be difficult for the capitalists to find a sufficient number of labourers who will be glad to enter into their service on almost any terms. The conditions existing at present in countries in the Far East are in this respect similar to what we may suppose them to have been in Europe before the great industrial evolution of the last few hundred years began. The current daily wages in the East are exceedingly low, and while the rich live in great luxury, the majority of the population is doomed to exist permanently in abject poverty. In Rome there was a small oligarchy of immensely rich men, and judging from the rate of interest, the profit on capital invested in commercial undertakings must have been enormous; but there is no evidence that large capital was invested during the Empire in productive undertakings except in trading operations, mines, and the cultivation of land. The wealth of the Roman Empire, when at its height, was no doubt very small compared with the wealth of the world to-day, and consequently the capitalization in proportion to the number of inhabitants was only small.

The labour was done to an almost incomprehensible extent by slaves, and under such conditions a great part of the capital could only find employment in the manufacture of luxuries for the rich, who derived, it must be remembered, a large part of their income from plundering the provinces, and whose purchasing power was thereby greatly increased. There were no factories with an enormous output as to-day, and when the bulk of the production was of luxuries, it might find a market among the capitalists themselves at prices leaving a relatively high profit.

Conditions are entirely different in the modern industrialized countries. Enormous capital has been invested in industries, railways, and ships, etc., and the output of these industries consists mainly of commodities which are intended for consumption by the masses. The rate of capitalization is so high that it has become an indispensable condition for the profitability of the undertakings to obtain labour of a relatively high degree of efficiency, which means that daily wages must be sufficiently high to induce the labourers to work intensely. Even if capital were not compelled to pay high wages in order

to obtain a large production, the products of the big factories could not find a market if the labourers, who are the overwhelming majority among the consumers, had not, because receiving high wages, a sufficiently great purchasing power.

At a time when there is not much capital in existence, and the new technical improvements are few and only take place at long intervals, there is more competition among the labourers to obtain employment than among the capitalists to get labourers. The rate of profit can be maintained on a high level by selling luxuries to the rich. At a time when capital rapidly accumulates, and technical improvements are constantly being made, the competition among the capitalists grows constantly keener. When a new method of production is introduced, by which the labour cost of a given commodity is reduced to one-half of what it was with the previous method, the happy first possessor of the new method may maintain for some time the same selling price as that charged by manufacturers who employed the old method, and if so, he makes an enormous profit; this very soon becomes known, however, with the result that fresh capital rapidly seeks employment in a branch of industry where profit is above the average. The previous method must be entirely discontinued as soon as there are so many establishments which use the new method that they are able to supply the entire demand of the market.

When this has happened the price becomes permanently lowered to a new level. The weight of the capitalization will compel the competitors on the new plane to produce as much as possible, and I am inclined to believe that when the cost of production is reduced to one-half, the selling price will tend to oscillate at about half the difference of the cost of production of the new and the old method. In other words, I think that the tendency of the capitalistic form of production, owing to the increasing capitalization, is towards a price level where the profit is equal to one-half of the wages paid to the labourers.

If the capitalization increased with a uniform increment, and labour could have been saved at the same rate in all branches of production, daily wages and efficiency of labour as well as the rate of profit would also be uniform, and the

selling prices of all kinds of commodities would be constantly falling at the same rate, corresponding with the succeeding stages of technical evolution.

But evolution does not follow straight lines, and economic activity is much more complex than this schematic exposition. There has been progress in all branches of productive activity, and technical improvements have manifoldly increased the productivity of labour in agriculture as well as in the manufacturing industries since prehistoric times, but the progress has not been simultaneous or equally great in all fields of human activity. Since labour-saving appliances have sometimes been introduced in one trade earlier than in others, not only have some products been more rapidly cheapened than others, but the price of certain products may have risen, although their labour cost may actually have been reduced as a compensation for the more rapid sinking of the labour cost of other products.

In the foregoing exposition I have assumed that the capitalization has trebled every time a new method of production has been introduced by which the labour cost has been reduced to one-half. If we suppose that there are some branches of production where a trebling of the capitalization only increases the production as from 1 to $1\frac{1}{2}$ instead of from 1 to 2, the selling price of such an industry will not follow the reduction of the price in those branches where the saving of labour is greater. Also, if in such industries, from one cause or another, the increase of the efficiency of labour is less rapid than in other branches, the fall in the selling price of the commodities will be still slower. I give a table (p. 46) showing how these factors will act.

In agriculture it has not been possible to introduce labour-saving methods to anything like the same extent as has been done in a great number of manufacturing industries, and neither has the capitalization of agriculture increased in the same proportion as that of the industries, and of the means of transport. By the capitalization of agriculture I understand the sum of capital actually expended upon improvements of the land, upon houses, and agricultural implements, but exclusive of the price paid for the land, or the capitalization of the ground rent. In this sense the capital employed in

Stage	Capital	Labour	Production	Cost per 1 A	Wage	Selling price per 1 A	Profit per day	Profit per year	Per cent. on capital
—	—	100	1 A	100	—	100	—	—	—
1	100	100	1.5 A	66.6	—	66.6	—	—	—
2	300	100	2.25 A	44.4	—	44.4	—	—	—
3	900	100	3.37 A	29.6	—	29.6	—	—	—
4	2,700	100	5.05 A	19.8	100	29.6	50	15,000	555
5	8,100	100	7.57 A	13.2	100	19.8	50	15,000	185
6	24,300	100	11.35 A	8.7	200	13.2	100	30,000	123
7	72,900	100	17.02 A	5.8	400	8.8	200	60,000	82.3
8	218,700	100	25.53 A	3.9	400	8	400	120,000	55.0

agriculture, even in progressive countries, is still small in relation to the sum of labour expended in conjunction with the capital, in comparison with the capitalization of industrial or transport labour. But it is probable that if the agricultural production be increased beyond a certain point, a relatively much greater increase of capitalization is necessary in agriculture than in the industries.

But if the rate of capitalization increases very rapidly in other branches of production, and remains relatively stationary in agriculture, the fall of the annual rate of profit in the other branches may bring about a fall in the selling price of agricultural products to equalize the profitableness of agriculture, which will continue until a growing industrial population necessitates the employment of more intensive methods of agriculture, with a corresponding increase of its rate of capitalization.

The rate of profit per unit of product is higher in the earlier than in the succeeding stages of capitalization, but the sum of profit per annum increases with growing capitalization. The indirect method of production is rarely, or never, carried on from the beginning to the end by one capitalist; the many different processes are treated as independent productive operations, the finished product of one industry being the raw material of the next. It is mainly this specialization which has in recent years led to many of the most important savings of labour. Moreover, as that part of capital which is not invested in tools, but is used to support labourers while

they are engaged in producing non-consumable products, may be employed, together with the profit, in any branch of industry as soon as the finished commodity has been sold, capital under modern conditions has become an impersonal and the most realistic element in human economic activity. Man is more or less tied to his place of abode, but capital flows freely from one place to another, seeking only the employment which offers best prospects of remuneration. Most capital is formed in those branches or places which have reached the highest stage of capitalization, but as the rate of profit per annum is also lowest in these employments, capital flows to other trades or other countries where capitalization is lower; these are thereby stimulated, daily wages rise, productive methods are improved, cost of labour is reduced, and while the percentage of profit declines, the sum of annual profit grows.

It is not generally recognized how much civilization owes to the Stone Age man.

He had learnt to make fire; to produce stone weapons and implements; to use bows and arrows; to use fish hooks; to make rafts and primitive boats; to cultivate corn and domesticate animals; to build houses; to weave cloth; to use plant colours for colouring textiles (?); to make pottery, etc. etc.

About 4,000 years before the Christian Era man discovered copper, and invented accidentally or intentionally that mixture of copper with tin by which he obtained bronze. This great invention, which placed at his disposal tools of a quality much superior to the stone implements, could not have been put to actual use if there had not already been a large accumulation of capital; and such costly and protracted undertakings as copper and tin mines could not have been worked if there had not already been an extensive commerce, and if the Stone Age communities had not already reached a stage of civilization in which large business concerns could be managed. If we are justified in drawing conclusions from the conditions which we find existed at the dawn of history among the people who were settled round the inner basin of the Mediterranean, the Stone Age ended with a small oligarchy of wealthy people for whose benefit the majority of the inhabitants were forced to work.

Civilization among the ancestors of the Egyptians, the Babylonians, and the Greeks, before they began to use bronze for their tools, had certainly reached a much higher stage than is generally supposed. The remarkable pictures and carvings discovered in France, which have been left by people who were contemporaneous with the mammoth and the reindeer, and consequently much earlier than the oldest Egyptian antiquities, testify to a certain culture; and as I have previously remarked, the discovery that the Stone Age man used the leg bones of animals for drilling holes in their axes is evidence that they were able to invent labour-saving methods.

About 2,700 years after the discovery or invention of copper and the introduction of bronze implements, iron was discovered. But at first this new metal was hardly so useful as bronze, being too soft or too brittle before its manufacture had been considerably improved.

The invention of both these metals, coming within a relatively short period, may therefore be considered as the final achievement of the immensely long part of the history of our race, which covers the time from the first appearance of man upon the earth to 4,000—1,300 years before the beginning of the Christian Era.

In the following 5,750 years, or the centuries from the discovery of copper about 4000 B.C. to the great inventions in the second half of the eighteenth century, innumerable technical inventions were made, and many important commercial improvements introduced; and although there have been retrogressive periods, notably after the fall of the Roman Empire, there had been on the whole a great progress in the productivity of labour, and the aggregate wealth of mankind had greatly increased from what we may assume it to have been at the close of the Stone Age.

But no complete revolution of the productive and economic conditions of our race, comparable in importance to the transition from the use of stone implements to the introduction of metal implements, had been made during the 192 generations or thereabouts, averaging 30 years each, which had elapsed from the day when the sun first shone upon a bright bronze axe or knife. Upon the whole production remained during

the Iron Age to about 1750 as it had been in the Bronze Age, restricted to hand work, in contradistinction to the machine work which has been introduced to a constantly growing extent during the last 170 years.

After nearly 6,000 years the conditions under which the human race does its productive work for the satisfaction of its needs, have again been revolutionized. Everything has thereby been thrown out of balance; there is no reason to be surprised that the relations between the different classes of society, and particularly between employers and labourers, have become disturbed. There is much more cause to be thankful that these disturbances have not been much more violent, and it is really wonderful that society has been able to find its level so soon in a world which is practically, in man's relations to it, a completely new one.

This revolution and the enormous increase of the capital of the world have already greatly improved the condition of the labouring population; the labourers are no longer slaves, but free co-operators with the capital. We are, however, as yet only at the beginning of the emancipation of the working classes from their bondage of poverty.

The increasing rate of capitalization, and the rapidly falling rate of profit which is a result therefrom, will compel the employers of labour to pay constantly advancing wages per day in order to get more efficient labour; and the enormous production, due to modern methods, cannot find a market unless the purchasing power of the working classes, who are the majority of the consumers, is sufficiently great—which means that they must earn good wages.

Production to-day consists mostly of tools and non-consumable products, or of commodities for the consumption by the masses. It is carried on with the help of the labourers for the benefit of the labourers; and although there are more luxuries produced to-day than ever before, trade and industries would soon come to a standstill if consumption of luxuries were so large that it seriously checked the constant addition to the capital of the world which is required to support a constant increase of the production of common commodities for consumption by the masses.

CHAPTER III

VALUE, DEMAND, AND SUPPLY

THERE have been almost as many learned definitions of the word *value* as there have been writers upon economic questions. This cannot surprise us, for although valuation enters, in one way or another, as a determining factor into every one of our actions, and the sense of value is inseparable from the desires which distinguish man from the animals, there is hardly anything in this world which is less tangible than value. One might be tempted to say that it is at one and the same time the most realistic of all the realisms of life, and a pure phantom, flitting about the brain, without any foundation in fact.

A thing is useful if it satisfies a human desire. Whether this desire is in itself rational or irrational, morally good or bad, does not immediately concern us in an investigation of the economic conditions of human activity. A great many of the wants and desires of man have been in the past, and still remain, coarse and foolish. But the central fact in connexion with these desires is that they cannot be satisfied except by commodities which man has produced, and that new desires are developed as soon as one has been satisfied. This never-ending growth of his desires has compelled man to a constant struggle for making his labour more productive, and it is to this struggle, accompanied by a growing refinement of his desires, that the evolution of human civilization is due.

The satisfaction of our desires is limited by our ability to produce suitable commodities, or by our power to buy commodities produced by others. Because we can never satisfy completely all our desires, we must always make a choice among them; we use our productive labour or our

purchasing power to satisfy some of our desires fully, or partly, leaving many entirely unsatisfied, or nearly so. This selection among our desires, or their classification as to how far they are to be satisfied by the means at our disposal, we make according to our sense of value. This sense is very unequally developed in different persons, but no person who is not quite insane is absolutely devoid of it. By this sense we are guided in the distribution of our consumption between different commodities in such a manner that the total consumption gives us the maximum of satisfaction which our production or our buying power places at any time at our disposal.

Not only is the sense of value individual, but the standard of each individual is constantly changing because of the change in productive power or buying power, which is one of the component factors of value. Yet valuation is nevertheless not arbitrary as one might be inclined to suppose. It is, on the contrary, subject to general laws which leave comparatively little room for individual choice.

A great number of human desires represent wants which are physiologically determined. It has been scientifically demonstrated that plants require for their healthy development a certain chemical composition of the soil. If one or more of the necessary elements of their food is lacking, the plants do not thrive, and the surplus of other elements cannot be absorbed or utilized. Just the same thing applies to animals and to man; their food must contain in definite proportions the different chemical components which are necessary for building up and maintaining a strong and healthy condition of the body, and for supplying it with the requisite energy. Since man is more widely distributed over the earth than any animal, our race has been more than the animals under the necessity of adapting itself to all kinds of climates and occupations. This involves, among other things, the use of a diet which is suitably differentiated. The varying desires among different races, or among different classes in the same nation, in regard to food and drink, which may at first sight appear arbitrary, will generally be found, when closely examined, to have their origin in indefinable and instinctive cravings which are adapted to the varying conditions under which these different races or classes live. When the Esquimau

likes seal oil, for instance, it is because its calories are indispensable to him for sustaining the severity of the Arctic climate. The national kitchen is a product of soil, climate, social conditions, and history. What applies to food and drink, applies, of course, also more or less to houses and the heating of the houses, to clothes, sanitary arrangements, etc. In all these things the individual is compelled to follow, in the main, the custom of the place, which is generally the outcome of the more or less successful efforts of generations to adapt themselves to their surroundings.

When diet, housing, heating, clothing, etc., are dictated by his surroundings, there is here a vast domain of the life of man, in which his wants and desires are determined mainly by the accident of his birthplace, without leaving him much liberty of choice. That remarkable phenomenon, idiosyncrasies, or an unaccountable antipathy of some people against specific articles of food, may account for a certain number of exceptions to the general rule. There are, perhaps, Esquimaux who dislike seal oil, and there are certainly vegetarians in England, the land of roast beef, but the majority of mankind have the same tastes and desires as their neighbours; they enjoy their food, without knowing that they do so in consequence of a number of causes which amount almost to a physiological compulsion.

Habits play a very great *rôle* in human affairs; man may begin by pure accident or by imitation to use certain things—to smoke tobacco, for instance—but after a while it becomes a habit to which he is more or less a slave. Imitation is another very prominent trait in human nature. Social standards of life are created by the multitude imitating those whom they consider their leaders. By a combination of imitation and habit many desires are created which may be termed social, because the individual is frequently constrained to feel the same desires as his fellows.

Many things which we use are complementary to other things, so that if we possess the one we feel a want unless we also become possessed of the other: an instance is a picture without a frame, or a frame without a picture.

What we call consumption, or the use or possession of the different products of human labour, is therefore in a great many

ways determined by conditions over which the individual has very little command ; he cannot as a rule make his selection among the commodities after his fancy or his own arbitrary standard of value, but must follow social standards more or less voluntarily.

It is therefore to a very great extent an illusion when it appears as if man acts on his own free will when selecting commodities to satisfy his desires, because these desires are for the most part the result of his surroundings, of hereditary instincts and social imitation. What there is of distinct individuality in our desires is probably in the majority of cases created by our habits, bad or good. Only of very few of our desires can it truly be said that they are part of our personality and are created by or subjected to our free will.

On the one side we come to the conclusion that our wants and desires are in the main determined by other factors than our free will. The extent to which it is possible to satisfy them depends, on the other side, on our ability to produce suitable commodities by our own labour, or upon our power to buy commodities which others have produced.

When there are many persons who have the same or very similar desires, and whose producing capacity or buying power is very nearly equal, we are justified by experience in concluding that their selection of the commodities by which these desires are to be satisfied will be made according to fixed laws. In spite of the old adage that there is no use arguing about tastes, statistical science has abundantly demonstrated that in a community which is sufficiently large to give full play to the law of averages, consumption is distributed between the different classes of commodities in fixed ratios. Each member of the community believes that he distributes his consumption according to his individual taste and valuations, but exceptions from the rule so compensate each other that if we take a sufficiently large number of people, living under similar conditions, the actual aggregate consumption differs only slightly from what might be estimated beforehand by a statistician who had sufficient data upon which to base his calculation.

The utility of an additional quantity of a commodity is

a function of its nature, and of the quantity of it which one already possesses. To a person who is on the point of dying from hunger, the very small quantity of food which saves his life is extremely useful. When a man has completely satisfied his appetite, an additional quantity of food may not only not be useful to him, but positively harmful.

If we divide commodities into three categories: *necessaries*, *comforts*, and *luxuries*, we find that the utility of the indispensable minimum of necessaries is extremely great; but the utility of an additional supply beyond a very moderate quantity sinks rapidly, if we must consume it personally, and cannot sell or exchange it.

Comforts and luxuries both satisfy desires which are less strong than that of self-preservation, and the utility of the first supply of these is therefore not so great as that of the corresponding small quantity of necessaries. But owing to the nature of the desires which are satisfied by comforts and luxuries, the utility of additional quantities of these does not sink so rapidly as the utility of additional quantities of necessaries. When society has reached a certain stage of economic evolution and refinement, the growing desire for luxuries, and particularly for comforts, is one of the strongest incitements to more energetic productive activity, and is therefore one of the most powerful causes of economic progress.

There is thus a difference between various classes of commodities as to the rate of decline of their utility, when the quantity is increased; but apart altogether from their cost, there is of all things a maximum quantity, beyond which additions to the supply cease to be useful, and also a quantity where each unit yields the maximum of utility.

When we have an unlimited supply of a thing, we take the maximum quantity which we find useful. A person who sits at a well-laid dinner table, eats and drinks until his desire for food and drink is satisfied, because he has no other trouble than to help himself of the good cheer which is placed before him.

But the world is not like a rich dinner table where everything is ready and plentiful; most people must work hard to obtain those things which they are to use, and even the richest man in the world cannot buy everything to which

he might take a fancy. Poor and rich alike must make a selection between the different commodities which are available, in order to make their total consumption of useful things fit their producing capacity or buying power. This selection among commodities is made according to our sense or feeling of value, by which we are enabled to make a comparison between utilities.

We will designate the utility of a thing by the letter U ; the different commodities of which the consumption may be composed, by the large letters, A, B, C ; the quantity of these by the small letters, x, y, z , etc., and the price by P .

Each time we have to decide the question, whether we shall spend labour or money for the acquisition of an additional quantity of a given commodity, of $\frac{1}{n} A$ for instance, where $\frac{1}{n}$ is a very small figure, we make, consciously or unconsciously, the following equation:

$$U \frac{1}{n} A : U (x A + y B + z C) + \frac{1}{n} A \\ = P \frac{1}{n} A : \text{total producing or purchasing power,}$$

or, to put it in words, we ask ourselves this question: does the utility of the addition to our consumption of $\frac{1}{n} A$ stand in the same proportion to the utility of our total consumption, including this addition, as the price of $\frac{1}{n} A$ bears to our total buying power? The value of a commodity is always found by a rule of three.

Not only does the utility of any given commodity vary with its quantity, but the utility of consumption as a whole is also, though at a slower rate, a function of the quantity. We may get so much of good things of all kinds that our appetite fades, and that further additions cease to give increased pleasure. The first two terms of the equation are therefore both variable. The utility (U) of each kind of commodity varies more or less rapidly with variations of its quantity, and the utility (U) of the total consumption varies more slowly, but it also varies with an increasing quantity. Whereas the variations in the utility of each commodity is, perhaps, more subject to general rules, dependent upon the nature of the commodity itself, the variations in the utility of a largely increased total consumption are more a matter of temperament. When a man

of an economical turn of mind has obtained a certain sum total of enjoyments, he ceases to desire for more, while the desires of another man may be almost insatiable.

The price which we must pay for the commodities which we select for consumption need not have anything to do with a market, and valuation is not restricted to commodities which we purchase from others. A man who personally produces everything which he consumes is just as much under the necessity of using his sense of value as he who buys everything which he consumes.

The cost to us of a given quantity of a commodity, $\frac{1}{n}A$, is either the sum of labour which we personally spend upon its production, or the labour we must give to others, or the money we must pay to obtain the commodity.

A man who supplies all his wants and desires by personally producing the commodities which he consumes, can produce with the means at his disposal in a given time different commodities in varying but definite quantities; for instance, 1 A or 2 B or 3 C . He cannot simultaneously produce both 1 A and 2 B and 3 C . If he wishes to consume $x A + y B + z C$, he must therefore divide his labour in such a ratio that the production of $(x) A + (y \times 2) B + (z \times 3) C$ equals his total producing power.

In the case of production for direct consumption, the two second terms of the equation of value are the labour cost of any commodity, of $\frac{1}{n}A$, for instance, compared with the entire sum of labour which is spent for producing all the commodities which this man wishes to consume. If a person earns wages or obtains in any other way a money income, and buys the commodities which he wishes to consume, he compares the money price of $\frac{1}{n}A$, or any quantity of other commodities, with his entire money income.

Whether we produce those things which we consume or buy them of others, the two second terms in the equation of value are therefore identical: they give the ratio of the cost of a given commodity to the total buying power, while the two first terms of the equation give the ratio of the utility of the same commodity to the utility of the total consumption.

By our sense of value we distribute our labour or our pur-

chasing power between the different commodities in such a manner that the entire consumption gives us a maximum of satisfaction.

In the equation :

$$U \frac{1}{n} A : U \text{ [total consumption} + \frac{1}{n} A] \\ = P \frac{1}{n} A : \text{total producing or purchasing power,}$$

it is the producing or purchasing power of different people which differs most, and this difference is the principal cause of the great variations in the valuation by different people. A poor man must compose his consumption otherwise than a rich man, because the cost of an additional supply of a given commodity, of $\frac{1}{n} A$, for instance, bears a different ratio to his small than it does to the great purchasing power of the rich man. Each consumer will add to his consumption of a given commodity, as long as its ratio of utility is greater than its ratio of cost; the addition will tend to diminish in proportion as these ratios approach equality, and it will cease when the ratio of utility has become smaller than the ratio of cost.

Valuation therefore depends upon this circumstance: the utility of an additional quantity of a commodity sinks more or less rapidly, according to its nature and the temperament of the consumer, but the cost of the whole consumption increases in direct proportion to the quantity. To a man who has already eaten half a pound of beef, an additional one-fifth is less useful than the first supply, while the addition must, under ordinary circumstances, be paid for at the same price per pound as the first half-pound.

There are a number of things which are absolutely indispensable to life, but which do not generally enter into our valuation, because they are supplied by nature or by the community in unlimited quantities. The air is such a thing, supplied by nature; in modern cities everybody has a sufficient supply of water placed at his free disposal. We breathe the air and drink as much water as we like, without being obliged to ask ourselves whether we can afford it or not. But the water is, of course, not supplied to the towns without great cost; and in large cities the air gets foul, and if we are to go into the country to get a change, it cannot be done without

expense. It is, therefore, as a result of social arrangements that the individual in civilized towns is freed from the necessity of giving a value to the air and water. He puts up with more or less foul air, and somebody else pays the cost of the water supply. Under special circumstances, however, both air and water acquire an enormous value.

The producing or the buying power of the individual is constantly changing, and his standard of value is therefore also constantly changing.

When a person's income increases to a certain point, many things pass out of his valuation which he has previously been compelled to value; that is to say, he has had to decide what quantity of the same he could afford to use. People who live in a well-regulated West of Europe city drink as much water as they desire without considering its cost; in a similar way well-to-do people eat as much as they like, dress as they consider suitable, drive in carriages when they like to do so, without asking the cost of these things. It has become to such people a part of their nature to live up to a certain standard without any consideration of the cost. The composition of their diet, the decision as to taking a cab or not, is determined by rational—or irrational considerations, but not by valuation.

A part of the consumption of the well-to-do classes is therefore not subject to valuation; it is only the remainder of their income, after this part of the consumption has been paid for, which is distributed according to valuation. When the income of a person becomes enormous, he is apt to lose to a great extent the sense of the proportions which determines the valuations of the majority of mankind. The papers often contain reports of follies committed by American multi-millionaires which show that the word value has hardly any meaning for them. They may think themselves raised by their great wealth high above ordinary mortals, but in reality they are greatly to be pitied because they have nothing by which to guide their actions, and as a result they commit their many senseless pranks.

While enormously rich people may lose all proper standard of value, because their income permits them to satisfy every whim of their fancy without the slightest trace of an effort

or any feeling as to the cost, there are other classes of human beings who have no reliable standard of value, not because they are too rich, but because their desires are very imperfectly developed. Although they may work hard, when they cannot avoid the necessity, they will give themselves up to idleness if by a lucky chance they have earned enough to satisfy their most urgent wants. After they have satisfied a few generally primitive needs, such people have no further motive to continued effort; the prospect of consuming a greater quantity or a greater variety of commodities is not a sufficient incitement to overcome their laziness.

The multi-millionaire loses his sense of value because in his equation the income is infinitely big; to the vagabond, the utility of an increased total consumption does not increase as is the case with normal persons, and he is therefore not willing to make any effort to obtain a supply of commodities beyond the barest necessities.

Les extrêmes se touchent. From opposite causes, immensely rich men and vagabonds have both lost their sense of value.

Among the majority of mankind who belong neither to the one nor the other of these categories, the sense of value or the ability to make the most suitable choice of commodities for consumption, according to circumstances and one's income, is developed with an almost infinite variety of keenness. While one man lives comfortably on a very moderate salary, another man can only with the greatest difficulty make both ends meet on a handsome income. The secret is that the former knows how to distribute his expenditure with a nice balancing of the value of the different commodities—it is by buying a trifle more of one commodity, and a slight restriction of another, by a little extravagance here and a pinch there, that in the end he has a feeling of having wisely and well satisfied all his reasonable desires. The other man frequently buys so much of one commodity in excess of his means that the satisfaction which he derives therefrom does not compensate him for the strong feeling of demands which must remain unsatisfied as a consequence of the over-expenditure in some departments of his consumption. When analyzing the matter closely, we shall discover that in most cases when people are dissatisfied with their condition, the cause

is their secret dissatisfaction with their own bad system of economy. Instead of using their own income in their equations of value, many persons are in the habit, when they make purchases, of thinking of the income of other people, by which they are only too apt to lose the keenness of their sense of value.

The process of valuation by which mankind distributes its consumption between the various classes of commodities, may be, and in reality frequently is, very defective. But there is no better process, and the consumption of society as a whole is determined, as to the relative quantities of the different commodities, by the valuations of all the individuals which compose society. Since the utility for the individual of additional quantities of a commodity sinks more or less rapidly, there is one law which rules supreme in all human affairs: when the supply of a commodity increases, relative to other commodities, beyond a certain point, successive additions become less and less useful or desirable, and, vice versa, if the supply diminishes below a certain point, each part of it becomes more and more useful and desirable.

Useful and desirable are terms which refer to the person who uses or who desires to possess a commodity, and value is a constantly fluctuating qualification given to the commodities by the consumers; not what the commodity has cost to produce, but what the consumer is willing to pay for it, is the measure of its value. The individual ceases adding to his possession of a commodity when to him the ratio of utility sinks below the ratio of cost, and as the consumption of the whole society is made up of the consumption by all the persons who compose society, the market value of a commodity of which the supply is increasing, sinks, and it advances if the quantity diminishes.

At a given price, each person buys such a quantity of the commodity, that to him the ratio of utility of the last addition is at least equal to the ratio of its cost. If the entire supply can be disposed of at the price asked by the producers, the quantity of the supply of the commodity is at the moment equal to the quantity which the consumers value at the current price. A reduction of the supply will cause an advance in the price, whereupon each individual consumer must alter

his equation; the smaller quantity at his command will advance in value to him, but owing to the difference in the income of the various consumers, the quantity of the supply will be distributed in a different manner between them than when the price was lower. The rich man will continue his consumption undiminished, while the poor may be compelled to forgo the consumption altogether or restrict himself to a very small quantity. The reverse happens when the supply is increased. The consumers again make a new valuation, and the poor can afford greater additions to their consumption of the commodity. At the lower price the supply may be disposed of, because it corresponds with the value placed by the consumers upon the larger quantity.

Under all the variations of the supply, the revaluations are made so that the aggregate sum of labour or money, which the consumers must pay for the possession of a given quantity of a commodity, corresponds with the utility of the same in proportion to the utility of all the commodities which are consumed. Let 10,000 at a price of 1 be the ordinary supply of a commodity; if the supply falls to 8,000 at a price of 1·3, or if it increases to 15,000 at a price of 0·7, the consumption of this commodity will in all three cases cost society about the same sum.

Each individual distributes his income between the different commodities which he desires to consume, more or less after fixed ratios, and when the market price of a commodity changes, he regulates as a rule his expenditure by increasing or diminishing the quantity which he uses of that particular commodity, rather than by altering that proportion of his income which he is in the habit of devoting to the consumption of this commodity.

The reader will, I think, agree that experience confirms this proposition, and it is easy to show why it must be so. The income is generally a relatively permanent factor in the equation of value. The great number of people who have fixed incomes know from bitter experience that the income does not rise because house rent or articles of food get dearer. When the cost of an article of consumption advances, it becomes necessary to readjust the household budget, and re-

trenchments must be made. Sometimes the whole scale of values must be readjusted, and the consumption of a number of articles reduced to find place for about the customary quantity of the commodity at the advanced price. But in most cases it is found that such a general readjustment is far from easy, and as a rule, I should think the restriction falls mainly upon that commodity which has become materially dearer, and in any case a reduced price seldom leads immediately to an increase of consumption which goes so far that a larger sum than before is spent upon the consumption of the particular commodity. For this increased expenditure cannot take place except by a reduction of expenditure upon other commodities, and it must not be forgotten that successive additions to the quantity become gradually less useful. In the long run a reduced price of a commodity may, however, lead to an increased consumption, proportionally greater than the fall in the price, so that there is a positive increase of the expenditure on such a commodity. After having used a larger quantity of a commodity during a certain time, a liberal supply of the same becomes a habit, and this may so much increase the desire for it, making its utility seem so much greater than before, that the consumer from that reason changes his equation and places a higher value upon it. When this happens it will often prompt the individual to greater efforts for increasing his income, in order that he may spend more upon this particular commodity without being obliged to restrict his consumption of other things.

The price at which the supply which is offered on the market at a given moment can be sold is therefore the total sum which all the consumers are willing to spend upon this article, divided by the quantity on offer. As there cannot be more than one price in one market at one time, the price must be equal to the value which the least eager buyers place upon the last additions that they are willing to make to their consumption, for only at a price equal to their valuation does their demand become an effective force in the market.

It is therefore the consumer and not the producer who determines the value of the different commodities which are on supply, because valuation is a comparison of the relative utility to the consumers of definite but varying quantities

of different commodities in certain quantitative relations to each other. Shall I buy another piece of bread or a sack of coals? Shall I hire a three-roomed house and forgo theatre tickets, or be satisfied with a two-roomed house and spend more money upon clothes? Shall I acquire good books for £1 or indulge in a bottle of champagne? It is upon the answer to countless such questions—instinctively felt or clearly formulated—that it depends how the individual is to spend his income. Each time the balance of the scale sinks in the consumer's mind in favour of a piece of bread, a three-roomed house, a bottle of champagne, or any other commodity, a part of the income of the individual has thereby been disposed of, and cannot at the same time be used for anything else, and simultaneously the collective demand has been increased to the extent of the individual additions to the purchase of the various commodities. In deciding the distribution of his individual consumption, each person gives a trend to the consumption of society as a whole. The poor man's purchase of a minute quantity is a factor in making the collective demand, just as much as the lavish expenditure of the wealthy. In all towns one may see at the office of the waterworks an apparatus which registers, by an indicator which moves up and down on a scale, the never-ceasing fluctuations of the pressure in the main pipes. Each time a tap is opened or closed in one of the thousands of houses, there is a slight corresponding alteration in the pressure; if a fire breaks out, and the fire hoses send torrents of water into the flames, the indicator sinks rapidly, to rise again when the conflagration has been suppressed. The demand of society for the countless classes of commodities which it consumes is never stationary; the changing market quotations tell us like the indicator of the water-registering apparatus how the many individual decisions as to additions to the consumption in conformity with individual equations of value, incessantly make the collective demand vibrate. Sometimes the changes in the demand are small and steady like the pulsations of a sound heart, sometimes as violent as a catastrophe, but in the last resort they are always due to individual valuations, to the wise or foolish answer to the personal question: is it worth my while to spend so or so much

of my buying power on an addition to this commodity in preference to that ?

The market supply of all commodities would be perfectly balanced if each commodity were present in just that quantity which in proportion to all the others would correspond exactly to that composition of the entire consumption by society as a whole, which would give the maximum of satisfaction of all the desires of all individuals.

But there is never equilibrium between supply and demand. The demand is not a fixed quantity, and although the producers try to gauge it as accurately as possible, because their profit depends on knowing it, they generally succeed only imperfectly. Apart from his attempt to estimate the future demand, the individual producer is mainly prompted by his wish to produce as much as possible, because, everything else being equal, the profit increases in direct proportion to the quantity which he can place on the market.

This is the principal difference between man as a producer and as a consumer, that as producers we expect to get the same price for the last article which we supply as for the first, while as consumers we value a smaller quantity relatively higher than a larger one. Those persons who are also consumers of the commodities which they produce, cease producing one article when they think that they have enough, and commence producing something else which they desire more, and their sense of value prevents them from producing too much of one thing and too little of another.

It is quite otherwise when different people are simultaneously engaged in producing the same class of commodity for sale in the market, to satisfy the desires of other people whom they do not know. Prompted by his desire to steal a march upon his competitors, each individual producer has only one aim : to place the greatest possible quantity of his commodity on the market, and to sell it at the highest price in order to make the greatest possible profit.

There is small cause for surprise, that the producers very frequently discover that in their eagerness to obtain individually a large share of the trade, they have collectively overdone the thing, and that the total supply of their commodity is

in excess of the requirements of the consumers at the price which they demand. One might with more reason wonder how it happens that the supply does on the whole fit so well to the demand as is actually the case. The explanation is, that the profit on capital acts, under the capitalistic conditions which dominate the world to-day, as a powerful regulator of the productive activity of humanity.

The daily wages of labour tend to equality, if not in the whole world, at least in the same country or locality, and the unit of wages or labour cost per unit of production tends towards equality in all countries; where daily wages are high the tendency is to force the labourers to yield in the same proportion a more efficient labour. I am fully aware that many employers of labour will be inclined to dispute this statement, and I know that the ca-canny or sabotage policy which the labour organizations more or less openly follow, is directed to the purpose of preventing the labourers from giving a full equivalent of labour for their wages. Of this question I shall have occasion to write more in detail in the chapter on wages. But I maintain that the tendency is as I have stated above. Nobody will deny, I suppose, that in a restricted locality employers of labour are compelled to pay very nearly the same rate of wages which their neighbours pay. The Trade Unions make agreements with the Employers' Associations by which wages in the different trades are regulated, and these rates must be paid by all employers, whether they are successful or not.

As a consequence of this tendency towards uniformity in the rate of wages, it is not possible for the individual employer of labour to increase his rate of profit materially by paying less for his labour than other employers do, and each employer will do his best to control the labourers, in order to make sure that they yield labour of an average efficiency, because otherwise his cost of labour would become higher than that of the other employers.

The result of the effort of the employers to get their work done cheaply, and of the labourers to get the highest remuneration for their labour, must be that in all branches of trade the cost of a given sum of labour tends to equality. The rate of profit of capital per unit of commodity tends towards

what I call the normal level, which depends upon the extent to which labour-saving methods have been evolved at a given time, and in a given industry, and upon the rate of capitalization. Profit being that part of the saving of labour which is due to the employment of capital, and which can be retained by the capitalist, the profit per unit of a commodity must constantly fall with the successive reductions of the labour cost, and the normal rate of profit tends to the same level in all branches of industry which have reached the same stage of capitalization.

If the market can normally absorb 10,000 of a commodity *A* at a price of 1, and the makers at this price obtain the normal rate of profit, they must pay the same rate of wages also, if they produce only 8,000 or they increase the output to 15,000. Assuming the normal rate of profit to be, as supposed in the table on page 41, 50 per cent. of the cost of labour, and supposing that the price advances to 1·3 when the supply sinks to 8,000, and that it falls to 0·7 with an increase of the supply to 15,000, we may construct the following comparisons of the profit :

10,000 selling at 1	.	.	.	.	10,000
Labour cost	.	.	.	.	6,666
				Profit	<u>3,334</u>
8,000 selling at 1·3	.	.	.	.	10,400
Labour cost (proportionately)	.	.	.	.	5,332
				Profit	<u>5,068</u>
15,000 selling at 0·7	.	.	.	.	10,500
Labour cost (proportionately)	.	.	.	.	9,999
				Profit	<u>501</u>

Innumerable variations in the supply of particular commodities take place daily; sometimes one, sometimes another commodity is produced in a quantity which is either too great or too small in proportion to the supply of other commodities, and there are therefore constant variations in the ratio between

supply and demand with corresponding variations in the prices.

It is the demand which determines the value of those commodities which, having already come into the market, form the present supply. But it is the profit which the producers obtain on their sale which regulates the supply of the future.

Persons take personal views, but capital is essentially realistic. It has no preference for one occupation rather than for another, it only seeks the most profitable employment. When the profit in one trade rises above the normal, because its products are not supplied in sufficient quantity to satisfy the demand which exists for them, more capital flows into this trade. As soon as the pendulum has swung in the other direction, and the market has been over-supplied with a particular commodity, capital ceases to flow freely into this channel; and after a while, the demand having increased, the whole production is absorbed at full price, and the profit again becomes normal in this branch.

It is by this realistic tendency of capital that the productive activity of society as a whole is being constantly regulated in such a manner, that each commodity is in the long run supplied in just such quantities, in proportion to the quantities of all the other commodities, that it corresponds with the aggregate wants of society.

In modern society, where practically the entire productive activity has been organized on a capitalistic basis, the tendency of capital to seek the most profitable employment would adjust the supply of all commodities more rapidly than is always the case, to suit the changes of the demand, if there were not powerful causes at work which, acting in opposite directions, constantly bring tension into the markets.

The products of human labour may be divided into two great categories: raw materials and manufactured commodities. It may be laid down as a general rule that it is not possible to increase the output of raw materials with the same rapidity as that of manufactured commodities. A variety of causes tend to make an important increase of the production of raw materials a slow process.

When a larger supply of cereals or meat is needed, either

new land must be put under cultivation, or the agricultural methods must be improved, and both capital and time are needed to obtain a larger quantity of farm produce. There is practically no limit to the quantity which might be raised, if all virgin soil were placed under cultivation, and the culture of all lands were improved to the highest standard of husbandry which is occasionally reached. But although the capital of the world that is invested in agriculture is in the aggregate enormous, the rate of capitalization in the farming industry is low in comparison with that of the most improved manufacturing industries. The sum of annual profit of the individual farmer is therefore on an average small compared with the income of the great manufacturing concerns. As it is the sum of annual profit which is the principal source of the accumulation of fresh capital, new capital forms more slowly in the farming than in the manufacturing industries. It is generally not so easy for a farmer, who does not himself possess the necessary capital for making improvements on the land, as for a business man, to obtain credit. It is a matter of common observation that a material increase of the agricultural production requires much time. The farming industry supplies not only foodstuffs, but also a number of raw materials for the manufacturing industries—wool, hides, flax, oilseeds—and the herds cannot be increased in numbers except in the course of time.

Ores are another very important class of raw materials. The consumption of metals constantly increases, and therefore also the demand for ores. Existing mines cannot always be made to yield a considerably larger quantity, and the discovery of new ore deposits is often a matter of pure accident. Even when ores are discovered in a given locality in paying quantities, it requires much capital, and generally a considerable time to develop a new mine. Ore deposits are frequently found in uninhabited places; roads or railway lines must be constructed, and houses must be built, before the mining operations proper can make their commencement. The results of mining enterprises are frequently disappointing, which often makes it difficult to raise capital for starting new mines.

When timber supplies must be drawn from new districts because the old forests no longer yield a sufficient quantity,

much capital is required for opening up the new sources of supply. The enormous increase in the consumption of rubber a few years ago caused much capital to be invested in rubber plantations, but it takes years from the planting of the trees until they may be tapped.

The circumstance that sufficient capital is, for different reasons, frequently not at once available for starting an increased production of raw materials, prolongs the time which must elapse before increased supplies can come on the market, even when the producers have become aware that they are needed. In comparison with the manufacturing industries, which are more concentrated in certain localities, the production of raw materials is dispersed over the whole populated globe. As a consequence of this wide distribution of the producers, they do not all at the same time learn the state of the market. A particular product may have been scarce for a long time in the central distributing markets before the news reaches the many remote corners of the earth from which this product is supplied.

The natural conditions under which raw materials are produced are such that it often takes a long time from the commencement of preparations until a new and larger supply can be marketed. But there are many other circumstances over which the producers have no control, which either prevent altogether or considerably delay an increase of the output of raw materials. The American prairies had existed from the beginning of the present geological epoch, but the lack of transport facilities made it impossible to cultivate them with a view to the export of wheat to Europe. The isolated settlers could not construct the long railway lines to the seaports. As soon as modern means of communication were opened, there was a rush of farmers, who took possession of the prairies and sent enormous quantities of wheat and other farm produce to the Old World. There is at present a scarcity of cotton, because the consumption rapidly increases ; and whenever there is a shortage of the American crop, the price rises very much. The cotton growers are perfectly aware that an increased cotton output might be sold with splendid profit, but special circumstances make it difficult to obtain suitable labourers in sufficient numbers, and the

world's cotton crop therefore does not increase at the rate which spinners would like to see. In many countries which might yield large quantities of raw materials, the political conditions are so unsettled that they retard and sometimes stop altogether an increased production. In other countries legislation may check the development.

As a result of the above, and many similar circumstances, the supply of raw materials does not always respond very rapidly by an increase to a growing demand.

The production of raw materials is, however, constantly growing. In its far-reaching effect one might compare this growth with the fall of rain over wide areas. If we observe a shower of rain, registering perhaps only a few millimetres, it does not impress us much as a possible source of power. But each millimetre makes 1,000 m.³ of water on an area of 1 km.², and if a river has a drainage area of 20,000 km.², a rainfall of 1 mm. aggregates not less than 20,000,000 m.³ of water; and when we see this water falling in one huge thundering waterfall, we stand in awe at the immensity of the powers of nature.

The production of raw materials is in reality the source and condition of the power of man over nature, but because it is scattered over the whole world the production at each place is not relatively very large, and an increase of the production in our own neighbourhood either entirely escapes our observation, or it makes upon us a mild impression, like that of a slight shower of rain; but these small and apparently unimportant additions of each locality to its output aggregate large quantities over all the producing districts or countries of the world. This constant increase in the production of raw materials comes, in ordinary circumstances, slowly, steadily, and almost imperceptibly.

The same law applies to raw materials as to all other products, that their value is determined by their relative quantity. If either the production is diminished, or a greater quantity is required, the value of the supply of raw materials which is available in the market advances, and the higher price which is obtainable makes the production more profitable. After a time which is short or long, according to the nature of the particular raw material or the situation of the places

from which the supply has to be drawn, the higher price acts on all concerned as a powerful magnet, the prospect of a higher rate of profit finally attracts the necessary capital, and either the old producers or new producers, or, as is usually the case, both old and new producers begin preparations for increasing the output in order to benefit by the high price.

It takes a certain time before the stimulus of the higher prices acts upon all the scattered producers of the raw materials, inducing them to make preparations for increasing the supply, and a still longer time must pass before the more abundant supplies are forthcoming. But when such a movement has once been started, the *vis inertiae* will keep it going for a considerable time, and supplies will continue to pour into the central markets in constantly increasing quantities, long after the shortage which originally caused the producers to enlarge their output has been filled. Instead of finding a ready sale, the new supplies often reach a market which becomes more and more glutted, and they cannot be disposed of except at low prices. When preparations have once been made for increasing the production of raw materials, it cannot be reduced again without inconveniences which are in many cases so great as to amount almost to a compulsory continuation. When such a contingency has occurred, and the output of raw materials has been largely increased all over the world, the supply keeps abundant for a long while, and prices remain below the average. The supply has become like an enormous waterfall which rushes down with irresistible force.

It also takes time to build mills and factories, but the time occupied in making the necessary preparations for starting a new industrial establishment or for enlarging an old one, is generally much shorter than the period which is required for creating those conditions which are needed for a material increase of the world's supply of raw materials.

The price of manufactured commodities does not generally go down immediately, when the raw materials which are used in their production fall in price, because the price of the manufactured articles is determined by the valuations of the consumers and not by the cost of production. At periods when the supply of raw materials is abundant, and they are selling cheaply, the profit of the manufacturers improves by

the saving on the cost of the raw materials. Whatever tends to raise the profitableness of an industry, makes those who are engaged in it more inclined to increase their production on the slightest sign of an increasing demand.

The buying power of the producers of raw materials is weakened in times of abundance because they only obtain poor prices, but, owing to the constant increase of the quantity, the aggregate buying power slowly increases in spite of the low prices. This leads, after a while, to a moderate increase in the demand of the producers of raw materials for manufactured commodities. The manufacturers, who find that orders are coming in more freely, increase the output of the existing establishments; the raw materials being plentiful, all they need to do is to run their mills full time or engage some more labourers. As they are able to sell their commodities at full prices they obtain a good profit. In proportion as the sale of manufactured commodities expands, there is also an increased consumption of raw materials which places greater funds in the hands of their producers, who are thereby enabled further to increase their consumption of manufactured commodities.

The manufacturing firms are managed by men whose training has taught them to study the fluctuations of the market in order to profit by them, and they have at their disposal a credit organization which is much more highly developed than that of the producers of raw materials. Selling their production on a commercial basis, the manufacturers feel almost instantaneously any change which may occur in the demand, and they are generally in a position to raise the necessary capital for establishing new mills or enlarging old ones, as soon as they have satisfied themselves that this will be a profitable investment. Very soon after the demand for a manufactured commodity has overtaken the supply, and there is a prospect of more than average profit in this branch of industry, preparations are therefore made for adding to the supply, and after a comparatively short period the production is actually increased.

The movement which was started when preparations were begun for increasing the output of raw materials, having actually resulted in an addition to the buying power of the world, is transmitted to wider and always wider circles in the

manufacturing industries. Manufacturers and dealers suddenly experience a general improvement in the demand, and by and by the consumption has grown so much that the existing establishments can no longer cope with it. Prices of manufactured commodities will begin to advance, and profit on capital invested in the particular branch or branches of industry will become more than normal.

When this stage has been reached it will set many keen minds working to calculate the chances, and if the enhanced profitableness of any industry lasts only a comparatively short time, capital will soon begin to flow into it, and preparations for an increased production—the enlargement of old or the establishment of new mills—will be made. Within a period which may be reckoned in months—at the utmost two or three years—the new mills and factories are ready to start operations.

To increase the producing capacity of the manufacturing industry, whether by enlarging existing mills or building new ones, involves the conversion of wealth, which has previously been idle, or of floating capital into fixed capital. Those who had been accumulating funds, perhaps during years, suddenly place them at the disposal of society for financing the necessary increase of the industrial productivity. Their capital is used for the purchase of building and of other raw materials and of machinery, and for paying wages to the labourers who are engaged to erect the new mills. The owners of the accumulated funds place them at the disposal of other people, who use them to buy commodities. When the transaction has been completed and the mills finished, the funds have disappeared, because the commodities into which they were exchanged by those who received them have been consumed. In place of their accumulated funds the previous owners have become the owners of the new mills, or shareholders in or creditors of the companies which own them.

To create more fixed capital than previously existed is to increase temporarily the consuming power of society. The potential energy stored in past accumulations is suddenly liberated. Everybody knows that in times when many new industrial establishments are started, and mills are being built, there is great activity; labour is in good demand, and because

the working classes are employed at good wages, the demand for foodstuffs and for commodities of all kinds is also good.

The increase in consumption, which is the effect of permanent investment of capital in new industrial undertakings, often lures those who manage the industry into a serious miscalculation of the permanent strength of the demand and the buying power. Orders are pouring in from all quarters, and it is impossible to distinguish those orders which are due to the transient capital expenditure from those which are the result of the normal productive evolution. Before the mills which are building have been finished and have begun operations, the extra demand which has been caused by the expenditure of capital for their building has often led to a further advance of the price of the commodities which the new mills will supply. This new advance makes the prospects of the industry appear more promising than they really are, and it is a common occurrence that a number of new mills are planned by eager promoters, and their building commenced, before the first mills, which were justified by improving trade, have been completed.

To build new mills it is necessary that society performs more labour than previously, for the production which was carried on before the building of these mills was begun is in no way restricted; it is on the contrary stimulated to greater activity by the better demand for commodities of all kinds. The sum of labour which has to be executed, therefore, increases by the labour involved in the building of the new mills; the number of unemployed labourers is reduced, and all the members of society are stimulated to greater exertions.

The new industrial establishments are gradually completed; the period of capital expenditure is over; bricklayers and other building labourers and engineers, who have been busy in erecting the new mills, have finished their work, and the demand for this class of labour subsides.

But when the new mills are ready, the production of those commodities for which they were planned is commenced, and changed economic conditions have been created.

With few and unimportant exceptions, the raw materials are non-consumable products: to become useful to the con-

sumers they must undergo a more or less complete transformation by the manufacturing industries, and the demand for the raw materials comes therefore from those who manage the industrial firms, and not from those who ultimately consume the manufactured commodities. A new industrial establishment therefore increases the demand for the raw materials which it requires; it has been calculated for a certain production, and if it is to yield the profit anticipated by the promoters, it must buy the quantity of raw materials for which it is arranged. The new mill will therefore increase the demand for raw materials, which will immediately have an influence upon the price. If the raw materials are in short supply and dear before the new mill is started, the additional demand will cause a further advance of the price, and the inducement for the producers to add to the supply will be strengthened; if the price is normal, the additional demand will tend to maintain it; if the supply is abundant and the price low, an additional demand will have a tendency to prevent the price from going still lower, and this will encourage the producers of the raw material to go on. How great the influence of the demand of the new mill upon the value of the raw material is to be, depends, of course, upon the ratio between the quantity which the new mill requires to the total supply, but each new manufacturing establishment is an additional buyer of raw materials, and by increasing the demand for these, it brings more money into the pockets of their producers, and thus tends to increase their buying power.

Not only are manufacturing firms practically the only buyers of the raw materials, but under modern conditions, industrial firms are, together with the producers of the raw materials, the employers of nearly all labour. Few people nowadays produce those commodities which they consume; the majority of mankind have become specialists who are engaged in the production of one commodity, and buy in the market all the other commodities which they require. The individual does his share of the productive work of society as manager or labourer in capitalistic undertakings, and at any rate in the industrial production, as carried on to-day, practically the whole is done in mills and factories by hired labourers.

Just as a new industrial establishment adds by its very existence to the demand for raw materials, so it adds also to the demand for labour. The mills of different kinds which existed before the new one started its operations, do not cease their production because this new mill has begun running; and the labour which is required in its production of commodities is therefore to that extent an addition to the total labour which has to be executed by society. A greater sum of kg. \times metre of energy must be transferred to matter by human muscular energy if the total sum of commodities produced by society is to be increased by the quantity which the new mill is intended to produce.

A new industrial establishment may obtain some labourers by engaging persons who have previously been out of employment. But the majority of labourers are at all times employed, and to get a sufficient number of labourers the new establishment must attract them by offering somewhat better wages than the old employers have been paying. The competition between the employers is thereby increased, and as a result the level of wages in industrial occupations will be somewhat raised; how much this advance is to be will depend upon the ratio of the sum of labour required by the new mill to the sum of labour which was previously performed by the whole industrial population. The additional industrial labour which is required is partly obtained by a general rise of the efficiency of labour, but more often by attracting what I would call crude labour, agricultural labourers, navvies, and similar unskilled labour, to the mills and factories. Under the factory discipline this class of common unskilled labour will be gradually educated up to a fair standard of efficiency, but as a rule the cost of labour will be somewhat above the normal in the first period after a considerable increase of the industrial production; the level of daily wages will advance more than the efficiency of labour.

The tendency of the establishment of a new industrial mill will be to increase the demand for raw materials and for labour, and therefore to increase the cost of both. It will, on the other hand, add to the supply of the finished commodity which it is to produce, and this increase of the supply will have a tendency to depress its selling price. How far the fall shall go will

depend upon the ratio of the addition to the supply of the particular commodity to the previous supply. But while a new industrial establishment adds to the supply of the commodity which it manufactures, it also increases the buying power of the society by its purchase of raw materials, and by the wages which it pays for labour, and the demand for its commodity may be so much increased by the purchases of the producers of raw materials and of the labourers, that the addition to the supply may be partly or wholly counteracted.

In the industrial community the knowledge of a shortage in the supply of a particular commodity spreads rapidly, and thanks to the ease with which capital may be raised for industrial undertakings which are believed to offer prospects of more than average profit, it frequently happens that instead of one mill, which might suffice for supplying the actual deficit, a number of mills are simultaneously established.

The value of the commodities which these mills must supply is determined, like that of all other articles, by their quantity in relation to the supply of all other commodities. If the output of the new mills added to the previous supply is in excess of the quantity which the market can absorb at the normal price, the result will be very disappointing for those who have been responsible for starting the new mills, and for the capitalists who have put money into them. When too many mills have been established for the production of a particular commodity, they will, as soon as they begin to operate, drive the price of raw materials and the wages of labour up against each other, and over-supplying the market with their commodity, they will be obliged to sell it cheaply. Instead of making more than average profit, as had been confidently hoped, the new mills will for a time be worked with less than average profit, and the over-production is often so great that they must be run at a loss.

The over-sanguine investors discover their mistake when it is too late. For when idle wealth or floating capital has once been converted into fixed capital by investing it in industrial works and machinery, it cannot be withdrawn again; the funds have been consumed, and in their place the owners possess the new mills or a lien on them. The loss of working them may be so ruinous that they are simply abandoned;

but it is only in rare cases that this happens. As a rule production is continued on the increased scale. It is when a serious over-speculation has taken place in a trade that the managers have an opportunity of showing their mettle. The cost of production must be reduced to come down to a level of value at which the whole output may be disposed of. In spite of over-production, the mills are under such circumstances frequently enlarged, because an increase of the production reduces the cost of production; methods for saving labour are perfected, and new ones invented; the control of the labourers is made more exacting to ensure efficiency; new sources from which to draw the supply of raw materials are sought, and new markets are tried for disposing of the finished commodity. Meanwhile the relatively cheap price at which sales are made stimulates the demand, and after a period, which may have been extremely trying to all concerned in the matter, it is one day discovered that the whole of the output can be disposed of, and the balance sheet at last shows a profit. Those people who have never had the experience of passing through such an industrial crisis have no idea of the terrible strain to which those who are responsible for the management may be exposed. It often happens that the selling price which finally yields a normal profit lies below the cost price which figured in the prospectus upon which the company was formed.

In the explosion engines which have become so common during late years, the power is generated by a rapid succession of explosions of minute quantities of oil. In the economic world the sudden additions to the producing power of the manufacturing industries may be likened to the explosion engine, because they produce economic motions. Each industrial expansion is due to the liberation of latent energy, accumulated in idle wealth, which is converted into active capital for starting the new industrial establishments. They stimulate the production of raw materials, and they demand more labour, and by offering commodities at lower prices they stimulate consumption.

In the beginning of a trade boom capital is freely subscribed to every new company which the promoters place before the public, if only the prospects are described in sufficiently glowing

terms. The wealth of the world is enormous, and after a period of quiet trade there is such a superabundance of capital seeking profitable investment, that it is pardonable if the promoters fall into the error of thinking that there is no limit to the wealth which is available for starting new undertakings. The sum of idle wealth which may be drawn upon for conversion into active capital, and particularly for investment as fixed capital, is, however, always small in comparison with the capital which is previously engaged in production. After a speculative boom has lasted for some time, the aggregate of new investments begin to tell upon the available accumulations. New subscription lists are no longer so rapidly filled, and at last they fail altogether to attract the public. The burst of speculation has spent itself; the idle wealth which had accumulated before the boom commenced was large, but not without limits. A period of digestion has become necessary, and new accumulations must be made before further industrial investments can take place.

The productive work of mankind is performed with a certain sum of kg. \times metre labour, which is a multiple of the number of labourers and their rate of efficiency. The commodities which are produced require per unit a certain sum of kg. \times metre labour. The labour cost per unit of kg.m. is the same, or rather it tends to equality in all branches of production.

If each commodity could be produced in the quantity relative to the quantities of all other commodities which would correspond with the valuation of society, the profit of capital in all branches of productive activity would also be uniform. But society would easily become stagnant if it were possible so nicely to adjust the supply to suit the demand.

The balance between supply and demand is, however, constantly being disturbed by the dynamic tension between the quantity of production of raw materials and of manufactured commodities, because there is a slow but steady increase of the output of raw materials, while the output of manufactured commodities is increased by short and rapid starts, followed by periods of rest as in the explosion engine. As soon as one manufactured commodity is produced in larger or smaller quantities than the market demands, the profit on its production rises above or falls below the normal, and

under modern capitalistic conditions, the producers, who must pay unchanged wages, immediately take steps to regulate the supply, as fast as possible, by restricting or increasing the sum of labour used in the production of that commodity. Each succeeding cycle of "good" or "bad" trade increases the producing capacity of mankind, and the output of raw materials constantly increases.

There seems to be no limit to the expansion of production, because new desires are developed as soon as one has been satisfied.

CHAPTER IV

WAGES AND PROFIT

HUMAN desires can only be satisfied by products which have been shaped by our labour.

Stuart Mill says: "If we examine any case of what is called the action of man upon nature, we shall find that the powers of nature, or in other words the properties of matter, do all the work, when once objects are put into the right position. This one operation of putting things into fit places for being acted upon by their own internal forces, and by those residing in other natural objects, is all that man does, or can do, with matter. He only moves one thing to or from another. Motion and resistance to motion are the only things which his muscles are constructed for."

Production, according to this definition, consists in bringing about such a combination of matter that it satisfies a desire. It depends upon the circumstances of each case how long the combination, which we have produced, is to last. The pyramids are more than 6,000 years old, and the stone and mortar which the servants of the Pharaohs "put into the right position" have remained there ever since. A glass of wine is the final outcome of a great number of productive actions, which have had for their object the use of the forces of the sun and the soil to produce this peculiar combination of matter; it is at once and for ever dissolved when the glass is emptied. An actor in a play also "puts objects into the right position." By motions of his body and the muscles of his face he creates a fleeting picture, and by his tongue he sets the air into vibrating motions so that words are formed. The peculiar combinations of matter which are evolved during his performance disappear, however, at the very same moment that they are produced.

Writers on Political Economy have spent a great deal of

ingenuity upon the classification of some kinds of labour as productive, and other kinds as unproductive. Stuart Mill has been classified as an unproductive man, while the composers who set up his books, and the printers, were reckoned as productive. This seems to me a futile play of words; in my opinion all labour must be considered as productive when it results in creating a combination of matter, however unstable, by which a human desire can be satisfied. All products are created, and services are rendered for the purpose of being consumed; and as a general rule their utility stands in inverse proportion to their durability. Many things which are indispensable are most perishable. It is not by the duration of a particular combination of matter that the labour must be judged which is spent upon its production, but by its suitability for its purpose.

Since all labour, whatever its character, consists in putting objects in motion, it may be reduced to the same denomination, for it always results in the transfer from our body to surrounding matter of a sum of energy which may be measured in $\text{kg.} \times \text{m.}$ We all contribute each day to the common household of humanity by our labour a certain sum of energy which, being expended according to our individual vocation, results in the production of a given quantity of goods or services.

My contention is that money wages, or the remuneration which each member of society receives in return for his labour, have a tendency towards uniformity; that is to say, the tendency is that a given sum $\text{kg.} \times \text{m.}$ of energy, transferred by our labour to matter, is paid for at all times, in all places, and in all trades at the same rate.

Two circumstances combine to obscure this law of the uniformity of wages, as I might perhaps be permitted to call it. The uniform rate of wages of which I speak, is the average remuneration in all branches of work. But there are some kinds of labour which are easily learned, and there is a greater competition for employment in such branches of industry, which presses the wages below the average rate. Conversely, there are other kinds of labour which only a few people are capable of performing, with the result that in such branches there is little competition, and wages rise above the average rate.

It is also necessary to remember, that the uniform rate of

wages refers to a given sum of energy transferred to matter or the work done, and not to the day or week, or to the total toil of the labourer. There is a very great difference in the rate of efficiency of different labourers, and even if they are paid at the same unit rate per kg. \times m. energy transferred to matter, the daily wage of one labourer may be many times greater than that of another. The technical evolution of the last 150 years has been accompanied, in the leading industrial countries, by a constant increase of the efficiency of labourers, and this increase has been more pronounced in some countries than in others. Very great variations in daily wages are therefore found when we compare different periods or different countries. The fact that the countries which are industrially most advanced, and where daily wages are high, can export their products to undeveloped parts of the world where daily wages are extremely low, is evidence that the higher daily wages have not been accompanied by a corresponding increase in the cost of labour.

The strength of the labourers, or their power of motion and resistance to motion, which are the only things for which their muscles are constructed, to use the words of Stuart Mill, varies nowadays as it has always done. Some persons or races are strong and energetic, and others are weak and lazy. Similar differences existed in the Stone Age and in the Middle Ages. In all ages there have been both intelligent and efficient workers, and stupid and inefficient ones.

There has, therefore, always been, and there is still a considerable natural variation among labourers in regard to the sum of energy which is transferred by them, in the course of a day's labour, to the matter upon which they work ; or, to put it in other words, one labourer may produce a greater quantity of goods or render more service than another, although they may be occupied in the same kind of production, under equal conditions, and use precisely the same kind of tools.

In the long history of the human race there have been many periods during which the efficiency of the working classes has progressed, and in which the average efficiency has been comparatively high, and there have been other periods in which the capacity to produce goods has declined both in regard to their quantity and quality. The final result of the technical

evolution of mankind from its origin down to the end of the eighteenth century was nevertheless such, that the average efficiency of labour and the general productive ability of our race remained at a low level. And how could it have been otherwise? The methods of production were still primitive, nearly all manipulations were executed with manual labour, and because the rate of capitalization was therefore low, the rate of daily wages was also very low. There was no inducement for the labourers to exert themselves intensely, and in regard to technical knowledge and administrative capacity the employers stood on a very low level compared with the standard of efficiency which in our days is indispensable for the management of large industrial or commercial undertakings.

In a study of the wages question, we may therefore start from the period when power machinery was introduced; that is to say, the last forty years of the eighteenth century.

Labourers who had received their training in the various domestic industries were suddenly converted into factory workers, and were placed under the discipline and strict supervision which is possible only when a number of labourers work in the same place. Under the conditions which at that time prevailed in England this naturally resulted in an increase in the efficiency of labour. For the working classes were so placed that they were under the necessity of trying to satisfy their masters in the amount of work, to avoid losing their employment. Because the work which they had to do when tending a machine was of a comparatively simple nature, and the same process was repeated from morning to evening, they gradually learned to work with greater rapidity and exactness than at the beginning. A long day in the factory was tiresome enough, but their work did not require so great muscular exertion as the handwork to which they had been accustomed. Their output with the help of the machine did not depend so much upon the amount of muscular energy which they brought to bear upon their work as upon the extent to which they learned to economize in those movements of the body or the fingers which came into play under the various manufacturing operations. The physical strength of an efficient labourer may not be greater than that of his inefficient neigh-

bour, but he turns out a greater quantity of products in a day because he avoids superfluous movements, and therefore transfers a greater percentage of his energy to the matter upon which he is set to operate. It therefore did not take a long time after the introduction of machinery before there was a general advance of efficiency among the industrial labourers of England, in spite of the many and great blunders in the management of the mills which the employers made at the beginning of the machine era, of which the most serious was the excessive employment of child labour. They used children under the erroneous belief that neither intelligence nor strength was required to tend a machine, and the result was that they overtaxed the children to a terrible extent, while they did not get as much work out of their machines as would have been possible if they had used grown-up labourers.

As long as employment still remained scarce, their mutual competition prevented the labourers from reaping much, if any, personal benefit from this increasing efficiency of their labour. Daily wages did not immediately rise in proportion, and it would therefore seem as if my law of the uniformity of wages was shipwrecked at the very outset. But like so many other "laws" which have been propounded, it deals with tendencies only, and does not always fit in with concrete circumstances of a given moment.

If my contention is accepted, that wages have a tendency to uniformity, and that the profit on capital is a part of the saving of labour, due to the employment of the capital, it follows that when the cost of labour is uniform, the profit per unit of product depends upon the rate of capitalization, but the annual rate of profit depends upon the extent to which it is possible to utilize the productive capacity of the manufacturing plant.

On page 38 I have assumed that with a capitalization of 24,300 the daily production would be :

Production 64 <i>A</i> , selling at 2·34 per 1 <i>A</i>	.	.	150
Less wages	.	.	100
			<u>50</u>
Profit per day	.	.	<u>50</u>

or 15,000 per annum, equal to $61\frac{1}{2}$ per cent. on 24,300. If the labourers had increased their efficiency by about 10 per

cent. to 70 *A* without getting higher wages, the calculation would be:

Production 70 <i>A</i> , selling at 2·34 per 1 <i>A</i>	.	.	.	.	.	163·8
Wages	.	.	.	.	.	100
Profit per day	.	.	.	.	.	<u>63·8</u>

or 19,140 per annum, or 80 per cent. on the capital.

If the manufacturer cannot find buyers for the output of his mill for the whole of the 300 days' work in the year, but can only sell what he can produce in 200 days, the calculation for a year will be:

$$200 \times 70 = 14,000 \text{ at } 2\cdot34 = 32,760$$

$$\text{Less wages} \quad . \quad 200 \times 100 = \underline{20,000} = \underline{12,760}$$

or only 52½ per cent. It will be seen that it is more advantageous for the manufacturer to reduce the selling price by 10 per cent. if he can thereby dispose of 300 days' production in a year:

$$300 \times 70 = 21,000 \times 2\cdot11 = 44,310$$

$$\text{Less wages} \quad . \quad 300 \times 100 = \underline{30,000} = \underline{14,310}$$

which gives an annual profit equal to 60 per cent.

If daily money wages in a particular branch of industry remained at the average level, and the efficiency increased, the manufacturers in that branch would get their labour done at a reduced cost. But as soon as a sufficient number of mills in this branch were started, so that the entire demand of the market could be supplied by them, the competition among the manufacturers would compel them either to raise the wages, if this were necessary to get a sufficient number of labourers, or to lower the selling price of the product in order to be able to place the entire output of the mills.

When wages in a particular trade or locality fall below the average, the weight of the capitalization tends to lower the selling price to compensate for this actual reduction in the cost of labour. Products of underpaid labour were sold at the beginning of the machine era, as they are sold to-day, below the level which would otherwise have been indicated by the rate of capitalization.

As producers the English labourers did not immediately,

a hundred years ago, benefit by their growing efficiency ; but as consumers they gained by a fall in the price of the commodities in the production of which their underpaid labour was used.

It was the growing weight of the capital employed in the industries which gradually caused a rise in money wages. It may be said that, from the labourers' point of view, the main change in the character of the machinery which has been a result of the successive improvements in the construction of the machines, has been to reduce the number of labourers who are employed on each machine, and to increase the rapidity of production. To tend a machine which runs fast does not require of the labourer a much greater physical exertion than when it goes more slowly, because the essence of machine production is to relieve the labourer of heavy work. But to watch a fast operation necessitates closer attention, and the labourer must learn to execute those manipulations which are required of him with greater rapidity and with a more supple hand. The work on a fast-running machine must be done with greater intensity than is needed if the process is slower. And it takes time before a labourer has a training which enables him to increase the intensity of his labour. A great and marked increase of the average efficiency of a large industrial population must therefore necessarily be a comparatively slow process ; and as daily wages are in the long run fixed according to the average standard of efficiency, a rise of wages must also be slow.

When such improvements of the machinery are introduced that the rate of capitalization is materially increased, the necessity of getting sufficient work out of the machinery will compel the manufacturers to try to get labourers who will and can do more work than the average. Their only means of attracting such labour is to pay higher daily wages than have previously been current. But the efficiency of the labourers, when it depends upon the intensity of their work, will not immediately be high enough to correspond with the requirements of the new machinery.

If, in the above example, the manufacturer pays double wages, but gets only 50 per cent. greater production, he will lose by the arrangement, unless he can raise the selling price

of the product somewhat. Let us suppose that he can sell at 2·50 ; if so, the calculation will be thus :

Production 64 + 50 per cent. = 96 at 2·50 .	=	240
Less wages 100 × 2 .		200
Profit per day .		40

or 12,000 per annum, equal to 49·4 per cent.

The labourers do not at once learn to turn out with a new machine as great a quantity of products as it is designed for by the engineer, and, to the manufacturer who has introduced new machinery, the cost of labour per unit of his product is therefore in the beginning somewhat higher than at the normal wage. Since the capacity of the new machinery cannot at once be utilized to the full extent, the selling price of the goods does not at once fall to correspond with the calculation of the designer.

Products of overpaid labour are therefore sold proportionately above the level which would be indicated by the rate of capitalization.

But when the labourers in a particular trade or locality get twice as high daily wages as the average rate, although their efficiency is only fifty per cent. higher than the average, there will after a time be increased competition among the labourers to obtain such well-paid employment. When sufficient time has passed, the competition will have increased the efficiency of the labourers in this trade even beyond the actual rate of wages.

The actual rate of money wages for x kg. \times m. of work done in a particular branch of industry will follow a zigzag line, a little below or a little above the average rate in all trades ; the selling price of the commodity will be to a corresponding extent reduced or raised ; the daily earnings of the labourers will increase in a progressive branch of industry in proportion to their efficiency, while the profit per unit of product and per cent. per annum on the capital which is invested in the industry, will sink with the increasing rate of capitalization, but the sum of profit will increase in proportion to the efficiency of labour.

At the beginning of the machinery era neither masters nor

labourers understood the wages problem. The former thought that if they only paid low daily wages they also got their work cheaply done. And nobody can blame the labourers that the thought was altogether foreign to them, that they could improve their own lot by exerting themselves more than before on behalf of their masters.

It was a great misfortune for England, of which I shall have more to say in another connexion, that at the critical period in her history when machinery was invented, the lot of the agricultural labourers was a miserable one. The advance of daily wages, and also the average efficiency of labour in the industries, would have been more rapid, if the industrial labourers who were thrown out of work by the new machines could have found remunerative employment in the country. The condition of unskilled labour of all kinds, and not solely in agriculture, was, and still is, very unsatisfactory in England, in spite of the rapid industrial progress of the last 150 years. It was not before 1870 that general and compulsory school education was introduced, and although the moral and intellectual influence of a school education which comprises every child may easily be overrated, there can be no doubt that England of to-day would have stood upon a higher plane if her people had had compulsory schooling of the entire people as long as has been the case in Scotland. The wholly illiterate are at last disappearing, but it would have been much better if there had been none of them at the time when the machines made their appearance. The miserable housing which the working classes of the towns of England have had to put up with, has also done much to keep the lower strata of the English working population, the unskilled labourers generally, and the casuals particularly, in a wretchedly low condition, intellectually as well as morally.

Out of the mass of poorly paid unorganized labour, the skilled labourers, who have formed the trade unions, have gradually created for themselves a position as the aristocracy of the working classes, but the status of the skilled labourers would have been still better if the lot of the majority of the English labour world had not been so depressing, and if the unskilled labourers had stood on a somewhat higher plane of civilization. There would have been more competition for the well-paid skilled

labour if the intellectual and moral condition of the lower strata of the working classes had been a better one, and keener competition would have led to a more rapid increase of efficiency of the skilled labourers, which would have been followed in due course by a further rise of daily wages.

The engineers who constantly constructed more fast-running machines, which involved a steadily increasing rate of capitalization, have nevertheless gradually changed the industrial conditions. Earlier than in any other European country, the British labourers learnt to work with a comparatively high rate of efficiency on modern fast-running machines. The cotton industry is a typical example of the interaction between an efficient class of industrial labourers and the art of constructing machinery. The superiority to-day of Lancashire in the cotton industry of the world depends upon the circumstance that the hereditary skill of the operatives has made it possible in Lancashire to introduce more and more fast-running spinning machines for high counts of yarn. England is not only far ahead of all other countries in the number of her spindles, but each of these does a greater work than is obtained anywhere else with machinery of the same type.

The advantage of having the start had given England at one time a superior industrial working population as far as skilled labour is concerned, and competition had compelled her manufacturers to pay higher daily wages than were obtainable in other countries. The manufacturers were not only compelled by competition to pay better wages, but there were also many of them who were shrewd enough to understand that it did not matter to them how much they paid their labourers per day if only their products were cheap. But this clear insight into the labour problem was not general, and did not fully determine the trend of the evolution. On the contrary, the English manufacturers handled the problem of piece payment from the beginning so clumsily that it gave the trade unions the pretext to handle it from the opposite point of view, and quite as clumsily.

Wages are paid at a uniform rate for the sum of $kg. \times m.$ energy which an average labourer can yield without overstraining himself. Time wages should therefore not be replaced by piece payment before the labourers have generally

learnt to do their particular kind of work with a fair average degree of efficiency.

The mistake of the English manufacturers was to introduce piece payment too early, and to reduce the piece rates time after time, overlooking the fact that if they really succeeded in getting the labour done at less than average cost, their mutual competition would finally compel them to forgo this advantage, and to give their buyers the benefit of the reduced cost of labour.

The labourers have made the opposite mistake of believing that they can get more than average payment for a given kg. \times m. of energy, and can shirk with impunity their duties to the masters. Whenever the trade unions force the payment above a level which agrees with the average rate of wages, and the cost of labour becomes thus artificially high, this extra cost is added to the price of the products. Let me point to the example of the building trades in Norway at the present moment. House rent in that country is going higher and higher, and the socialists demand municipal action to keep rents for the working classes on a level which they consider reasonable. But at the time of writing there is a general strike of all the labourers in the building trades, who demand higher payment, although it has been established beyond doubt that wages in these trades are higher in Norway than in Denmark and Sweden, and that the cost of house-building is abnormally high in Norway, because the amount of work which the labourers are willing to do, or are allowed by their unions to do, is gradually sinking.

The attempts of the masters to get their labour done below the average cost by constantly reducing the rate of piece payment, was therefore doomed to disappointment, just as the opposite attempt of the labourers to raise their wages by forcing up the rate of piece payment, and shirking at the same time their duties, will fail.

These attempts were not only fruitless, they were also positively injurious to the interests both of masters and labourers, and of society as a whole. For the bitterness of this struggle and the mutual recriminations estranged masters and labourers, and a barrier was therefore placed to a further rapid advance of the British working classes. It seemed for a time

as if the lead in industrial evolution were to pass from England to other countries.

Although British manufacturers generally work in a systematic manner, the establishment of schools of technology was neglected, thus depriving the manufacturers of the means of developing their industries along the lines which were adopted by other nations. This was a great mistake, because the creative genius which seems to be inherent in the English race was no longer sufficient when other nations had begun to make technics the subject of the closest scientific investigations. In the absence of a sound and general technological education in England, it fell to other countries to make the problem of the cost of labour the object of scientific study. About thirty years ago, public opinion in England at last recognized the great danger to her industrial supremacy of neglecting the technological education of her youth. With characteristic energy a movement was set on foot for remedying this want, and a number of new universities were created in Manchester, Sheffield, Birmingham, and other provincial towns, and the University of London established the Technological Institute at South Kensington. In these splendidly equipped and practical universities, which have been founded mostly by private gifts, the trade or trades of each town are especially taught; they have, in other words, been specialized, which is one of the characteristics of modern science; and in addition to day-schooling for the well-to-do, all these universities and technological institutes have a large number of evening students. Thus the means of obtaining a sound theoretical technical training is thrown open to every youth who is willing to sacrifice his leisure hours in order to increase his knowledge. When these schools have been at work another generation or two, they will, no doubt, have considerably raised the intellectual standard of the country, the ability of masters and labourers will be higher, and the industrial processes will be more systematized than formerly.

One problem, the study and solution of which will be greatly benefited by this important change, will be that of wages, the management of labourers, and the cost of labour.

The daily wage is the sum of money (or money's worth) which an employer must pay to a labourer to get the right to

dispose of his labour. The amount of daily wages is proportioned to the strength of the labourer, and therefore women and children generally receive less than men; but the main determining factor is the efficiency of the labour. When the daily wage is determined by the efficiency, the wage or the money payment for an equal sum of effective labour is normally always and everywhere the same.

The increasing rate of capitalization makes it necessary for the capitalists, in order to counteract the declining percentage of profit, to employ constantly more effective labour to be able to utilize to the full extent the producing power of the machinery, and to obtain this end they must pay a constantly increasing daily wage in order to get more and more efficient labour.

Moreover, in spite of the sinking percentage of profit, the sum of profit or the annual gain of the undertaking increases at just the same rate as the daily wage and the efficiency of labour.

In the course of years which have elapsed since I first propounded this theory,¹ I have again and again reconsidered it, and I have found nothing which might change my opinion or make me doubt that it is correct.

On the one side is the fact that the methods of production are incessantly being improved, and that the selling price of manufactured goods are as a consequence constantly sinking. The sum of capital invested in industry is on the other side growing more rapidly than the increase of population, and probably nobody will deny that the profit on capital is sinking, both when reckoned per unit of product or in percentage on the capital employed.

But it is an undeniable fact that both the annual sum of profit of capital and the daily wage are growing from year to year, and this cannot, I believe, be explained in any other way than by supposing a gradual progress in the efficiency of the labourers, which makes it possible constantly to obtain a better utilization of the producing capacity of the capital.

Or to express the same thing in other words: if we compare decennial periods it will be found that the production of the

¹ In papers read before the Statsøkonomiske Forening of Christiania, 1892 and 1896.

world's commodities has increased very much more rapidly than the growth of population, and the average production per individual is consequently much larger now than in past ages. If we had sufficient statistical data for computing the selling value of the annual production, this would certainly show a considerably slower growth than the quantity of the production, as a result of the fall in the prices at which the commodities are sold.

The gradual fall in the selling price of the commodities benefits us all, as consumers, whether we are capitalists or wage earners. But as by far the greater part of the commodities which are produced in a year is consumed in the creation of new capital, or by the working classes directly, because the enormous modern production presupposes an equally enormous consumption, the greater part of the *invisible profit*, as one might justly term the price reduction, is a benefit for the working classes.

Let me make a point here. The public is not generally fully aware of how great a part of the collective capital of our race and how great a part of the available labour are nowadays employed in such a manner that the resulting products are non-consumable, and cannot find an outlet except by being employed as new capital. It is only necessary to consider all mines, all iron and steel works, all engineering works, etc. : some iron and steel is, to be sure, used directly as knives and other iron wares in the households; but most of the existing steel works would soon have to be closed unless new railways, new steamships, new mills, etc., were constantly being built, and the same applies largely to the production of wood goods. The bulk of the coal which is annually won is used in the industries, and so on.

It is true that a capitalist who makes a large annual profit, say £50,000, may, if he chooses, use the whole of it for his own enjoyment. It is also the popular opinion of the common people, that the rich are rolling in luxury, and consume the greater part of their income just as those do who earn their livelihood by wages. Neither can it be denied that the enormous increase of wealth has created great luxury among the rich people of our time. It is nevertheless evident that if the greater part of the annual earnings on capital were not invested

as new capital, many of the works to which I have alluded above would be compelled to stop. As this not only does not happen, but, on the contrary, the production, for instance of iron and steel, constantly increases, we are justified in drawing the conclusion that the capitalists do not really use the whole of their earnings to pamper themselves in luxury, but that, on the contrary, they invest the greater part thereof in new undertakings. The free choice which they apparently have is therefore an illusion—the active capital must always grow, and it may also be said with truth that the middle classes, who at present own and manage the bulk of the capital of the world, are strongly imbued with the propensity for saving, or, perhaps, we should rather say, with a desire to see their capital grow.

When the working classes carry on a constant war against the capitalists this is therefore, in my opinion, very unreasonable.

The obstacle to a still more rapid economic evolution than the one through which the civilized nations have already passed, and particularly the obstacle to a great improvement in the material condition of the working classes, is not that they are exposed to the extortions and tyranny of the capitalists, but is to be sought in the comparatively low level of intelligence, trustworthiness, and efficiency which the majority of the working classes as yet possess.

I do not say this to reproach them. It simply could not be otherwise; human culture must rest on an economic basis, just as plants must have soil to grow in. The intellectual and moral level of the working classes could only be raised gradually in proportion as their earnings have grown. As their earnings are dependent on their efficiency, which can only grow slowly, it is not to be wondered at that the working classes have not progressed further in the 150 years that have passed since the machinery era commenced; there is more reason to rejoice at the great improvement which has undoubtedly taken place. I feel confident that the laws which govern economic evolution will make it possible for the working classes in the next hundred years to catch up with much of the start which the middle classes still have both as regards income and culture.

Those who are to do labour for a wage try to obtain the

highest payment for a minimum of labour ; employers, conversely, try to get as much work as possible done for the smallest payment : this is the rule almost without exception everywhere and at all times. Where there is free competition, this struggle of opposing forces must have a tendency to equalize the wages within the area of competition, making the payment equal for equal sums of effective labour, irrespective of the character of this labour, thus creating an average wage which agrees tolerably with the average efficiency of the labourers.

All are not equally good in making a bargain ; in one case a labourer may succeed in obtaining a higher wage than he deserves, and there are employers who understand exceptionally well the art of "driving their employees." But as the labourers as a class still seem to believe that slovenly and inefficient labour, or waste of the tools and materials of their employers, is a loss only to those who pay them, and not to themselves, this is just as great a misunderstanding as when many employers of labour still believe that they can reap a personal gain by paying their labourers niggardly.

In isolated cases the one or the other party may make a gain, if wages are pressed below or raised above the average. But such cases become more rare the more developed the economic conditions become. If it is a question of a large economic field, and the wages in an entire district or in a particular branch of industry are permanently raised above or pressed by special circumstances below the normal level, the competition between the capitalists will result in shifting the loss or the gain from the producers, who are directly affected by it, to the consumers.

If employers in a particular branch of industry are compelled to pay wages which, relatively to the efficiency of the labour which they get, is higher than the average wage in other branches, they would not earn as much as other capitalists if they sold their products as cheaply as they would be able to do if the wage were normal. If they must nevertheless sell so cheaply the consequence would be a smaller influx of capital to this branch of industry, until the restricted supply of the products would gradually cause a rise of the selling price. The opposite would, of course, happen, if the employers in a particular branch of industry were able for any length of time to

sell their products for a price which corresponded with normal wages in their production while they actually paid less than normal wages.

Since labourers, including in that term all who live on wages, are the preponderating majority among the consumers, it follows from what has been said that difference in wages without a corresponding difference in the efficiency of the labour is neither a gain nor a loss to the capitalists in their capacity as producers, but is a loss or a gain to the whole consuming public—that is to say, especially to the working classes themselves.

Political economists frequently talk of a current profit in each country. I do not share in the conception of a common or normal rate of profit. I believe, on the contrary, that as a matter of fact there is always, even at the same place, a great variation between different branches of industry in regard to their rate of profit, according to the stage of evolution which they have reached, and it is precisely this variation in the rate of profit which is the motive power in productive evolution. But at every stage of economic evolution we meet this law, that the employers or the capitalists try to buy most labour for least payment. The more capital is employed in a business the more important it is for its owners that the labourers do efficient labour, and those employers who pay high wages have thereby the means of obtaining those labourers who are most efficient.

There are therefore variations in the daily wage. But as one may suppose that the egoism of the employers always acts with about equal strength without any regard to the stage of economic evolution, the matter may be conceived thus: that an almost equal pressure always rests upon the labourers and others who live by wages, of which the result ought to be that all labourers should receive a payment which is exactly proportionate to the efficiency of their labour. But there is one circumstance which prevents this principle of equality from being fully carried out.

All kinds of labour may be divided, disregarding its other characteristics, into two categories: according to the degree of difficulty of its performance, and according to its more or

less agreeable or disagreeable nature, and these categories may again be subdivided thus :

very difficult,	average,	easy.
very disagreeable,	indifferent,	agreeable.

If all people, or the majority, were about equally intelligent and efficient, the difficulty of the labour need not be a barrier to the choice of a particular career ; and under such circumstances the majority would by preference seek those occupations which might be called agreeable. When a great number sought employment in these branches the wages in them would fall below the average, while they would conversely tend to increase in the disagreeable occupations.

Employment in the civil service is looked upon by many people as a dignified occupation, and scavenging is disagreeable and dirty work. Scavenging is, however, badly paid in comparison with the civil service. The explanation is, of course, that the entrance into the civil service depends upon having passed certain examinations which cannot be done unless the candidate has had a long and expensive education ; but anybody can do the work of a scavenger with hardly any previous training.

That wages are determined upon the whole not by the more or less disagreeable nature of the labour which is to be performed, but by its degree of difficulty, shows that the average efficiency of the majority of the working classes is still comparatively low. There are only very few people who can seek the occupations which are very difficult to fill, and, conversely, there is a great number of labourers whose intelligence and general efficiency is so low that they are restricted to such occupations as do not require a preparatory training.

The ratio between the supply and demand therefore brings about this anomaly, that the agreeable kinds of labour are paid above the average wage, and the disagreeable often below the average. This disparity is not only relative but absolute ; if those people who are capable of undertaking the difficult kinds of labour are more efficient than the majority they are entitled to a comparatively higher remuneration ; but owing

to their favoured position in the competition they get more than that—in some cases very much more.

There is, on the other hand, no doubt that those persons who are in the unfortunate position that they must undertake whatever job is offered them, because they cannot execute any difficult labour, will often be compelled by their mutual competition to do their work more efficiently than they are paid for. As I have shown above, this will not be a gain to the employers who use their labour, because these will be compelled by their mutual competition to sell the products at a proportionately reduced price. But the fact that those members of society who are most unfavourably situated may thus be still more depressed is in itself greatly to be regretted, and it might be termed unjust if it were not a natural result of the existing circumstances. But it is also a great obstacle to general evolution. For a reasonable wage which makes it possible for the labourer to live decently is the first condition to an advance of efficiency. As an instance of such underpaid labour I may mention the confectionery trade; in most countries the wages in this branch of industry appear to be generally miserable.

Compulsory school education will, when it has acted for a sufficiently long time, powerfully contribute to alter the conditions to which I have just alluded. The effects of the common school education have already begun to make themselves felt. The competition for such kinds of work as may be done “in a frock-coat,” for instance as clerks in private offices, as subordinate engineers, etc., has already become much keener than before, with the consequence that wages for such situations have fallen relatively to the wages of better paid manual labourers.

But what will more than anything else emancipate the lower strata of the working classes from the necessity of labouring for starvation wages is the constantly growing employment of machinery in all branches of industry. It is, at any rate, a fact that in no industry which has come to be carried on in factories does one hear of such miserable wages as where the work is partly or entirely carried on as a domestic industry.

Until quite recently it used to be said that the introduction of machinery had reduced the labourers to mere machines.

This injudicious talk has nearly ceased ; it has been necessary to bow to the incontrovertible fact that the intellectual level of the industrial labourers is on an average higher in proportion as there are more and more complicated machines in use in the factory in which they are employed.

An English newspaper once made the remark that the labourers come to regard their machine as if it were another being ; they think of it so long that they almost come to live in company with it ; and there can be no doubt that the many ingenious machines which the industrial population has nowadays to tend, must develop their intelligence.

The two factors, a greatly improved common school education, and the constant use of ingenious machinery, in which gifted men have written their thoughts in steel and metal, just as other men write them in books, must be expected to raise gradually the reasoning faculties of the great mass high above what it has been in past ages.

Without underrating in the slightest degree the educating influence which the schools and machinery will exert, I lay greater stress on another side of the matter.

When a thing is to be produced without the help of machinery—with manual labour and a few and simple tools—one must almost be an artist if the product is to be of high quality. But the machine technic has now reached such perfection that the quality of the product does not any longer depend, to the same extent as before, upon the intellectual and manual gifts of the labourer. Special talents are as rare in the manual as in the intellectual field. But what is needed when a man is to yield, with the help of a modern machine, a perfect product, is not so much the possession of special intellectual or manual gifts as quickness, trustworthiness, and energy—he must be able to tend the machine, when it runs, with the speed for which it is constructed.

But trustworthiness is a moral quality, and I believe—I may be mistaken, but it is my decided impression—that there is much less difference between individuals in regard to the capacity for the training of their wills than in regard to the training of their intelligence.

No one can, no matter how much he may try, make himself an intellectually highly gifted man if he is not born so. One

cannot, for instance, by force of will make oneself a great artist or a prominent man of science ; but most people have it in their power to train themselves to become trustworthy. A person may, of course, be so stupid that he cannot be set to tend even the simplest machine. But the duties of each labourer have been so much simplified by the introduction of machinery that most labourers can learn to do the work ; and what is of the utmost importance to the employer is, that he may rely upon his labourer, and nearly everybody who is willing to do so can train himself so as to deserve to be trusted.

If this view is correct it points to very far-reaching ultimate consequences of the universal introduction of machinery.

The number of situations which must still be characterized as "very difficult" will gradually be restricted, and those situations will at the same time be materially increased in number which are, as regards the nature of the labour, "very easy." It will at once be perceived how much this will tend to a greater equalization of wages, and the number will be materially reduced of those persons who are compelled by their low rate of efficiency to accept any job they can get, and must be content with starvation wages.

Practice makes the master, as the saying goes, and experience teaches us that generations are required, even under modern conditions, determined as they are by machine production, before the working classes of a country reach to such a level of efficiency that they can earn very high wages. But the practice which is needed—I lay stress on it again—is more of the moral power than of the intellectual faculties.

Let me again mention the cotton industry as an example of what I mean. On the occasion of a comparison between the cotton industry of Germany and Lancashire in other newspapers, an English trade journal pointed out that although the statistics of the number of spindles seemed to point to a relative retrogression in Lancashire, it was necessary to remember that in the past ten years fast-running spindles had in Lancashire been exchanged for slow-running ones to such an extent that the Lancashire mills produced much more yarn than a similar number of German spindles. This change, said the journal, the English manufacturers could not have made with advantage if they had not had labourers who knew how to use the improved

machines. A spinning machine acts automatically ; the attendant has only to take care that all the spindles are constantly filled with material, and to bind the threads when they snap. The difficulty of tending a fast-running machine is, firstly, that one must have the necessary manual training to do the manipulations which are needed with sufficient quickness, and secondly, that one must be trained to keep during the whole time the attention closely fixed upon this one thing—the doing of the work.

Within reasonable limits the efficiency of the labour stands in direct proportion to the quickness with which the work is performed, just because it is necessary to concentrate one's attention and to strain every nerve upon the work, if it is to be quickly done. The hours of the daily labour must be shortened where intense work has become the rule.

The so-called normal day of labour will therefore come of itself, as a fruit of industrial evolution. If it is introduced by law before the working classes have learned to work with sufficient intensity, the consequence will be either a corresponding fall in wages or a rise in the cost of production and of the selling price.

In this connexion a few words about strikes may be appropriate. The time is past when the labourers were called immoral simply because they tried to obtain higher wages by a strike. But it is the exception that strikes are economically justified from the point of view of the labourers themselves. The employers, when following the dictates of their self-interest, act as the defenders of the consumers. Under this regime all labourers are forced to yield the most, and these, being their own free masters, will seek those branches of industry where wages are highest. But no one will obtain wages which are materially higher than the efficiency of his labour justifies in comparison with what other labourers earn with equal efficiency.

Those trades in which the labourers are strongly organized and skilled may form an exception to this rule. Under specially favourable conditions such labourers may be able to force their wages somewhat higher than their efficiency would warrant. But as I have previously remarked, this is obtained at the cost of the consumers, and not at that of the employers ; and it is therefore not a gain to the whole of the working classes.

In the long run such high wages cannot be maintained, unless there is an artificial limitation of the conflux of new labourers to such a trade, making it more or less similar to the guilds of old. It is well known that the organized labourers have made attempts to bring about such a limitation, by restricting the number of apprentices, and thereby creating a sort of a privilege for themselves among the working classes. If tendencies of this kind should become victorious it would not only be opposed to the principle of liberty, but in the long run it would damage to a considerable extent the interests of the working classes as a whole by checking their economic progress.

On the other side it cannot be denied that the fear of strikes may sometimes have been beneficial. As soon as the efficiency of the labourers has been so much increased that the wages may and ought to be advanced, it is as much in the interest of the employers as in that of the labourers that this advance should take place. But competition usually prevents one employer from raising the wages if they do not all do it. The egoism of the capitalists which acts as a uniform pressure on the labour market, without which this would become quite erratic, and therefore unjust, may sometimes become too heavy a burden, and it is therefore useful that there is a power which can regulate it.

I have, so far, mostly dealt with those forces which tend to make wages uniform, viz. the mutual competition of the labourers and the egoistical attempt of the employers to buy their labour as cheaply as possible.

But it is equally necessary to examine those forces which bring about a rise of daily wages, and a corresponding increase of the efficiency of labour. I must again refer to my theory that at each new improvement of the productive methods, the fresh saving of labour which is obtained thereby is the sole source of profit on the capital invested in the new productive method; and this profit must become constantly smaller per unit of product, because it is a further reduction of a quantity, the cost of production, which had previously been reduced by all the antecedent improvements, and because the capital which must be invested per labourer or the rate of capitalization grows much more rapidly than the increase of production.

The gain on the capital sinks in two ways : the absolute profit per unit is reduced, and this profit must be calculated on a greater capital.

The more expensive the tools, the more important is it that they may be fully utilized. The capital is invested so that it can be employed only together with a given number of labourers. More labourers cannot be set to tend a machine than it has been constructed for, and when the machines are constantly improved, and the rate of capitalization at the same time grows, it is therefore of growing importance to the owners of the capital to obtain the services of more and more efficient labourers who can do more work, but this they cannot secure except by paying a proportionally higher wage.

This theory may be condensed thus : in spite of the sinking rate of the percentage of profit on the capital, the sum of this profit or the annual gain on the production increases in precisely the same proportion as the daily wages and the efficiency of labour.

This hypothesis agrees with the fact that both the annual sum of the profit of the capitalists is larger and daily wages higher in those countries which are industrially highly developed than in primitive countries.

There would be no difficulty if it were possible simply to go into the market and offer a high wage to be certain of obtaining sufficiently efficient labourers. A general efficiency is, however, a matter which requires time for development, as does all other human progress, which the employers in Norway have often felt. The progress in efficiency and rise of wages must of necessity go on *pari passu* and with small steps each time.

When a new factory or other business is established at a place, it does not follow as a consequence that the existing mills are restricted in their activity, and there is thus an increased demand for labour with the result that wages advance. If the new mill is a highly developed establishment it can, and it must to be successful, pay better wages than the local tradespeople or the farmers can afford. It will thereby be enabled to attract from its district the best labourers ; but even these will not be at once so efficient as fully trained labourers in the

same branch in other districts where the industry has long been established.

It may be said to be the rule that in newly established industries, in countries which are comparatively little developed industrially, the cost of labour will for some time be rather high, although the daily wage may be lower than in old centres of industry. But if a mill pays better wages than those current in other branches in the locality, there will after a while be strong competition to get employment in that mill. If no new mills are established, which again create a stronger demand for labourers, the employer may after some time expect to find an increased efficiency among his labourers.

The advancing standard of life has this effect. The first labourers will, after having enjoyed better wages than they can obtain in other branches, not like to forgo this advantage; and because all those who are outside the mill try to get in, the labourers who are employed will instinctively work more energetically, at the same time as they also get more practice.

If there is a prolonged industrial quietness, so that no new mills are established, the point may be reached that the mutual competition among the labourers forces an efficiency which may to some extent exceed the actual wages. But as the products have a world-wide market this state of affairs cannot last for any length of time without attracting more capital to this branch, and new mills will be established, thus bringing the pendulum back to the starting point.

Industrial progress and increasing efficiency of labour are secured by the automatic growth of the capital of the world.

As regards efficiency, it may grow in two ways. The labourers may learn to produce a greater quantity of products per day with the same machinery, and they may learn to discontinue that waste of materials, carelessness of machinery, and negligence about the quality of the product which are still unfortunately so common.

The last-mentioned faults are mostly due to thoughtlessness. The labourers think that the loss which they thus

cause falls exclusively upon those who pay them their wages. But if this loss could be avoided it would be possible to pay proportionately higher wages ; and in some branches of industry the employers have begun to pay premiums for saving in the use of coals, oil, and requisites.

As the interests of the capitalists are identical with those of the labourers, it would be well if wages were generally regulated as much as possible in such a manner that it stimulated the labourers to work with greater energy, and with greater care as regards materials and machinery. The trade unions should do all that lies in their power to get such systems of wages generally introduced, and ought to advise their members to increase their efficiency as the only sure means of getting higher daily wages.

CHAPTER V

GROUND RENT

DIVISION of labour became very early in the evolution of our race one of the most powerful as well as one of the most universal means of increasing the efficiency of labour. This division, however, depended upon the extent to which productive activity might be concentrated in certain localities. Productive labour may be divided between the different members of a family which lives isolated, and that is compelled by this circumstance to be self-supporting. Division of labour, even when not carried further, would certainly make the production larger than it would be if each member of the family produced alone and entirely with his own labour each article which he required.

But when Adam Smith says: "The greatest improvement in the productive powers of labour, and the greater skill, dexterity, and judgment with which it is anywhere directed or applied, seem to have been the effects of the division of labour," he has not in his mind the primitive division of labour which is also practised by savage tribes, but he speaks of the far-reaching division which is practicable only when and where the production of a commodity has become a trade. As an instance he gives a detailed description of the trade of the pin-maker, which was at that period, according to him, divided into about eighteen distinct operations.

A little further on Smith says: "This separation (into different trades) is generally carried furthest in those countries which enjoy the highest degree of industry and improvement; what is the work of one man in a rude state of society being generally that of several in an improved one. In every improved society the farmer is generally nothing but a farmer; the manufacturer nothing but a manufacturer. . . . The

nature of agriculture, indeed, does not admit of so many subdivisions of labour, nor of so complete a separation of one business from another as manufactures. . . . The spinner is almost always a distinct person from the weaver; but the ploughman, the harrower, the sower of the seed, and the reaper of the corn, are often the same. . . . This impossibility of making so complete and entire a separation of all the different branches of labour employed in agriculture is perhaps the reason why the improvement of the productive powers of labour in this art does not always keep pace with the improvement in manufactures. The most opulent nations, indeed, generally excel all their neighbours in agriculture as well as in manufactures; but they are commonly more distinguished by their superiority in the latter than in the former."

In another connexion Smith says:

"The division of labour, from which so many advantages are derived, is not originally the effect of any human wisdom which foresees and intends the general opulence to which it gives occasion. It is the necessary, though very slow and gradual, consequence of a certain propensity in human nature which has in view no such extensive utility; the propensity to truck, barter and exchange one thing for another . . . it is common to all men, and found in no other race of animals, which seem to know neither this nor any other species of contracts."

I intend to make these shrewd observations by Adam Smith, with which I fully agree, the starting point for an analysis by which I hope to be able to prove that very important conclusions may be drawn from the fact that "the propensity to truck, barter and exchange one thing for another" is inherent in human nature, and is to be found in no other race of animals. I will, in particular, attempt to demonstrate that rent of land, or the payment which those who are not owners of land are willing to give for its use, or the extra gain which the owners of land may obtain over and above ordinary profit on their capital, is a direct consequence of trade and exchange of commodities between persons who live in different parts.

Barter, or the exchange of one thing for another, would

never take place if there were no differences in the producing capacity or the valuation of various people. Between two men, who are free to make a contract, A must be able to produce a commodity x cheaper, that is to say, with less labour than B, and B must be able to produce another commodity y cheaper than A, or the value which they respectively attach to x and y must vary, otherwise there will not be any inducement for a barter of x for y between them. Barter, the most primitive form of trade, and modern highly specialized mercantile transactions equally presuppose as the essential condition disparity in the cost of production or the valuation, or both, of those commodities or services which are exchanged.

Such disparity may be due to many causes. One man may be better fitted by nature than his fellows to execute a certain kind of productive operation. Or he may have acquired more skill in his particular work because he has practised it longer or more assiduously than the others. Or the taste of different members of society may vary in such a manner that one man values one thing, another man another thing relatively higher than the other. Under such conditions it will be profitable to exchange commodities, but this exchange necessitates their double transport, from the seller to the buyer and vice versa. And this transport adds to the cost of production, which is not really completed before each commodity is placed in the hands of the consumer on the spot where he wishes to use it. In a primitive state of economic evolution the cost of transport increases in direct proportion to the distance, and this cost was very high before any artificial means of transportation had been introduced. Disparities in the cost of production, which were due solely to personal variations in the productivity of labour, could therefore not give opportunity, in a primitive stage of economic evolution, for barter or exchange of commodities beyond very narrowly circumscribed areas. The advantage in the cost of production, whatever it might be, of one producer over his fellows would very soon be outbalanced by the heavy cost of transporting the two commodities which were exchanged, over more than comparatively short distances. What may be called the commercial circle of a given locality, or the area within which its products might find buyers who could

and would give other commodities in exchange, would in a primitive society have a very short radius. A great disparity of tastes, and consequently of the valuation, between different members of a primitive society, which would make barter over longer distances feasible, would hardly be developed under conditions which compelled the whole tribe to be satisfied with very little because they could not produce much.

The division of labour which depends upon an exchange of commodities would therefore not have been possible beyond comparatively small areas if there had not been other and more powerful causes which could bring about greater disparities than personal variations in the cost of production, and more important variations in the valuations than would be possible in a tribe of which all the members lived under very similar conditions.

That evolution of our race which has actually taken place would not have been possible, or it would have been extremely slow, had the whole of our globe been one sameness; if it had been, for instance, one gigantic prairie, stretching endlessly in all directions without break or change of nature, with the same climate everywhere.

This little home of the human race may have, and has, in the opinion of the misanthrope, many defects, but nobody can reasonably complain of its sameness. There is, on the contrary, the most remarkable diversity in configuration, distribution of land and water, height above sea-level, soil, climate, mineral deposits, etc., and the profound variations in the nature of the different parts of the globe which are the result, create the most trenchant inequalities in the surroundings and the natural conditions under which the numberless and dispersed races, nations, tribes, and families of *homo sapiens* live, produce, and consume.

It is the endless variations in the natural conditions, and not the personal qualities of man, which explain those disparities of cost of production and of valuation that are great enough to outbalance the cost of transport over long distances of the commodities in which they are embodied.

When the natural conditions of one locality are decidedly more suitable for the production of the commodity *A* than of the commodity *B*, and another locality is more suitable

for the production of *B* than *A*, not only will it be to the mutual advantage of the inhabitants of these localities to exchange products, if they are not separated from each other by too great a distance, but to the extent of this exchange there will be a concentration of production. One locality will be thereby placed in a condition to produce a greater quantity of *A*, and the other locality a greater quantity of *B*, than could be consumed at the actual places of production; and it is evident that unless there is a concentration of production there cannot be a minute division of labour.

At a very early stage of evolution, the natural disparities in cost of production or valuation, due to natural causes, were great enough to give rise to important international trade over distances which were not only actually very long, but still more so when regard is had to the very high cost of transport under primitive conditions. There is thus evidence of an extensive trade in the Stone Age in flints and other stones suitable for the production of implements. Such stones would, of course, have a very high scarcity value in countries or districts where they were not found; and it is easily understood that the inhabitants of these parts were willing to pay a very high price for them. It is less easy to imagine what kinds of products or commodities they had to offer in exchange that would be acceptable to the owners of the stone quarries, for these products, when they should be transported over long distances, must contain much value in a small bulk.

It depends upon the character of the products that are exchanged whether or not there can be a great concentration of production. If one country is particularly well suited for the production of wheat, another for the cultivation of the vine, there may be an exchange of wheat for wine between them, but in each part of these countries the production cannot be increased beyond the quantity which the land will yield. Adam Smith pointed out that the nature of agriculture does not admit of so many subdivisions of labour, nor of so complete a separation of one business from another, as the manufactures. The reason why this is so, and why division of labour cannot be carried so far in agriculture as in manufactures, is that the former is necessarily an extensive, and the

latter is generally a more or less concentrated production. The farmer cannot reap on an acre more than a certain, and not very great, quantity of cereals or vegetables, but there is practically no limit to the quantity of raw materials which may be collected in a given spot for manufacturing purposes. In the manufactures there is therefore no natural limit to the concentration of the production, which is limited only by the capacity of the producers, and by their ability to find a market for the commodities which they turn out.

Technical evolution, both in agriculture and in manufactures, has to a large extent consisted in introducing methods by which a greater concentration of production, and at the same time a greater division of labour, are possible ; but the nature of agriculture sets a comparatively narrow limit to the concentration, while in manufactures there seems to be no limit beyond which technical improvements cannot increase it.

We come, therefore, to the conclusion that human productive activity, as regards the extent to which it is possible to concentrate it, falls into two great categories :

Agriculture and the production of most kinds of raw materials are carried on extensively, and do not permit of a far-reaching division of labour.

In the mining industry and most kinds of manufactures, on the other hand, concentration of production in certain localities and a corresponding minute division of labour are possible, the degree of concentration depending almost exclusively upon the stage of technical evolution which man has reached at a given time and in a given locality.

In the twentieth century, civilized nations have accumulated such a vast store of technical knowledge, the command of man over nature has become so great, that it is possible to start almost any kind of manufactures wherever it may be deemed desirable. It is an almost daily occurrence that important works are established in out-of-the-way places which were previously only very sparsely populated. When new works or a mine are started, people soon flock to the new scene of activity, concentrated production immediately begins, and the labour is divided among the various members of the new society according to the system which has nowadays been

introduced in all branches of the manufacturing and mining industries. To-day it is comparatively easy to start new industries or transplant old ones to places where they have not previously been carried on, and thus create new centres of concentrated activity. But in past ages this was not so.

When the first signs of a rudimentary civilization manifested themselves in the countries around the Mediterranean, the lawlessness and consequent insecurity were so great that it was a necessity for each little tribe or nation to build a stronghold or a castle to defend themselves against the frequent attacks of their neighbours. Round these castles there were clusters of huts which expanded by degrees into small cities. Where a number of people live close together a rough division of labour will gradually be established, even when the manufacturing industries are still in their infancy. It is, indeed, this primitive division of labour which prepares the ground for subsequent industrial progress. By a lucky chance one or another of the many townlets which dotted the littoral of the Mediterranean had been built on a spot which, from one cause or another, offered special advantages for trade; it was perhaps situated at a natural harbour or at a fording place on an important river, and as a result of its advantages it would increase in population more rapidly than the other small cities. The very fact that it had more inhabitants would lead to a greater division of labour than elsewhere, which would still more facilitate its growth. In course of time a few of these growing towns would become mighty cities, such as Rome, the Metropolis of the Roman Empire, Athens, Carthage, or manufacturing cities like Corinth, and by their mere size these favoured cities became great emporiums of trade, importing goods from, and exporting to all the known parts of the world.

There was a similar growth of the cities of Italy during the Renaissance, and in Europe north of the Alps in the Middle Ages.

In these populous places, trade and industry could flourish, because the active exchange of commodities gave the opportunity for a great concentration of production with a corresponding very minute division of labour. This permitted both masters and labourers to acquire great skill in their various

trades, and the products of their manufactures were far superior in quality to the coarse household fabrics which were produced in the country districts. The city manufactures were also, in comparison with their quality, much cheaper. Because the manufactured commodities generally represented a great value in a small bulk they could bear the cost of transport over long distances. The great ancient cities consequently became the centres of exchange in commercial circles with a great radius. The numbers of antique objects of Roman, Greek, or Oriental origin which have been discovered in Scandinavia is evidence of an extensive trade.

In the commerce between a centre of exchange and the area within its commercial circle, the goods which are exported cost at the circumference their town price plus the cost of freight from the town; and the foodstuffs and other raw materials which are imported, cost at the centre their local price, i.e. the price on the farm, plus the cost of freight to the town.

I will attempt to show how this law acts upon the value of land which surrounds an important and growing centre of exchange.

In the ancient world, the citizens of the many small towns were originally owners of the land in the neighbourhood which they farmed personally, and the community was thus self-supporting in the matter of foodstuffs, etc. But when the small towns began to grow into populous cities, they could no longer be supplied with the necessary quantities of foodstuffs by this primitive method. Rome of the Empire, and even during the Republic, required a regular corn trade just as much as the modern big cities. The growth of the city necessitated the drawing of the food supply from a constantly increasing area. How great this area must be depended upon the number of the inhabitants of the city, which determined the quantity which they needed, upon the productivity of the land, and upon the number of the agricultural population within the area of supply.

For the sake of simplicity I will restrict my analysis to one article of food only, viz. wheat.

If there had been no centre of exchange in the country

where the city was situated, and the land had previously been uninhabited, as were the American prairies before the first white settlers arrived, the land would have had no value, but each newcomer would have taken possession of a piece of it, just as the white settlers did on the prairies. Living under very primitive conditions which did not permit of any concentration of production, the farmers would use their capital to produce, among other things, the wheat they wanted for their own consumption. They would earn an average of profit which would be at a high percentage, as always at a low stage of evolution, and wages would be low, but the land, as such, would have no rent value.

In such a country a city begins to expand. A fanciful picture, the reader may think, but such was the condition under which all the cities of antiquity have commenced. In proportion as the number and opulence of the citizens increased, the quantity of food which was required grew larger, and the nearest fields which belonged to the townspeople could not any longer supply enough. To satisfy their wants the townspeople must buy wheat of the farmers who lived farther away.

This new demand gave those farmers an opportunity which had previously been lacking, of concentrating their activity more exclusively upon the cultivation of their land. They could grow more wheat than was wanted in their own household, and a primitive division of labour could begin among them. They would not ask a high price for their wheat, and would even cart it to the market to find a buyer. But the demand constantly growing, the supply must be drawn from more and more distant districts, and the cost of transport would therefore play a constantly more important *rôle*.

Whoever pays for the transport, the cost of it increases, when the transport must be done by carriage over roads, in direct proportion to the distance; and finally the freight becomes an important factor in the formation of the price in the market-place of the city. As there cannot be at one time more than one price for the same commodity in the same market, the price will be regulated by the cost of transport from the most distant district from which it is necessary to draw part of the supply.

The farmers in the districts surrounding the city previously

produced just enough wheat to satisfy their own requirements, or a quantity such as they could dispose of locally. They will not change their method of husbandry and send wheat to the city—let us call it Rome—unless they can get as much for it as they have been in the habit of obtaining in the local market. If the farmers are to obtain their accustomed price, the market price in Rome must be equal to the local price plus the freight to Rome. The market price in the centre of exchange will therefore determine the area of the supply; no wheat will go to Rome from places which are so distant that the market price in Rome, less the freight from such districts, leaves a return to the farmer which falls below the local price of wheat.

All the farmers within the commercial circle of exchange receive the same price for their wheat as the farmers whose land is situated at the greatest distance from the centre, and whose wheat is needed to make the supply big enough. But the cost of transport on the wheat which is grown on land nearer the centre, is lower than the maximum cost on the greatest distance, the cost varying according to the situation of the land, measured along the distance from the centre.

It is the saving on the freight on the products which gives land a situation or rent value. The rent value of agricultural land is therefore exclusively the result of the concentration of production in a centre of exchange, and of the consequent division of labour into its two main branches: agriculture and manufactures.

The most favourable condition for a city as regards its supply of agricultural products, is when it is situated in the middle of a great and fertile plain, for when the supplying area has approximately the form of a circle, the distance to its circumference will be the shortest. There are, however, not many prairie-like plains in the Old World, and Italy in particular is a mountainous country, and when Rome grew into a big city the corn supply became a most difficult problem. At first the corn was obtained from different parts of Italy, next from Sicily, and finally it had to be imported largely from Egypt and other African districts.

The corn which was needed to feed the Rome of the

Emperors was transported over very long distances, and there was nothing in the area of supply to remind one of the circle. I will nevertheless use a circle in order to give a schematic view of an area of wheat supply.

I will use a quarter of wheat as the unit of comparison. It is not known—at least, I do not know—what was the average yield of wheat per acre in the Roman period; but at the time when Rome was founded and long afterwards, it was probably not a very high one. In our time the average yield has been stated to be: in Russia, one quarter (8 bushels) per acre; in the United States, 11 bushels; in France, 16 bushels; and in England, 4 quarters (32 bushels).

Let us suppose that at the time when Rome began to buy wheat from more distant districts the average yield in Italy was one quarter per acre. As a picture of an area of supply, I will take a circle with a radius of 10 km.; 1 square km. (1,000,000 m.²) is roughly speaking equal to 250 acres. In order to demonstrate more clearly the influence of the freight on the price, I will magnify the cost of transport, and say that the cost of transport of one quarter of wheat was $6\frac{3}{4}d.$ per km., or $5s. 7\frac{1}{2}d.$ for 10 km.

If we draw concentric circles for each km. from the centre or the market-place of the city, from 1 km. to 10 km., we get the following acreage in each of the belts thus formed:

	Radius		Area	Acres
Innermost circle,	1 km.	. . .	3.14 km. ²	= 785
Belt between 1 and 2	2	„ . . .	9.42 „	= 2,355
„ „ 2	3	„ . . .	15.70 „	= 3,925
„ „ 3	4	„ . . .	21.98 „	= 5,495
„ „ 4	5	„ . . .	28.26 „	= 7,065
„ „ 5	6	„ . . .	34.54 „	= 8,635
„ „ 6	7	„ . . .	40.82 „	= 10,205
„ „ 7	8	„ . . .	47.10 „	= 11,775
„ „ 8	9	„ . . .	53.38 „	= 13,345
„ „ 9	10	„ . . .	59.66 „	= 14,915
		Total	314.00 km. ²	= 78,500

On these 78,500 acres the production would be, according to our supposition, 78,500 quarters of wheat, and if this quantity

was sufficient for the supply of the town, the market price in the centre must be equal to the price on the farms, which we will call £1 2s. 6d. per quarter plus 5s. 7½d. for freight from the periphery, or £1 8s. 1½d. per quarter.

The consumers must pay, in addition to the farm price at the periphery, 5s. 7½d. on each of the quarters, or a total of £22,078 2s. 6d. for cost of transport on the whole supply. But the freight which must actually be paid by the individual farmers, is a much smaller sum, and the difference is an extra gain, over and above ordinary profit on their capital, for those farmers whose land is situated nearer the centre. Let me show how this works out according to the situation of the land.

	Produc- tion Qrs.	Freight to city per qr. Kr. ¹	Freight on pro- duction Kr.	Saving of freight per qr. Kr.	Saving on total production Kr.
Inner circle .	785	0.50	392.50	4.50	3,532.50
Belt 1 to 2 km. .	2,355	1.00	2,355.00	4.00	9,420.00
„ 2 „ 3 „ .	3,925	1.50	5,887.50	3.50	13,737.50
„ 3 „ 4 „ .	5,495	2.00	10,990.00	3.00	16,485.00
„ 4 „ 5 „ .	7,065	2.50	17,662.50	2.50	17,662.50
„ 5 „ 6 „ .	8,635	3.00	25,905.00	2.00	17,270.00
„ 6 „ 7 „ .	10,205	3.50	35,717.50	1.50	15,307.50
„ 7 „ 8 „ .	11,775	4.00	47,100.00	1.00	11,775.00
„ 8 „ 9 „ .	13,345	4.50	60,052.50	0.50	6,672.50
„ 9 „ 10 „ .	14,915	5.00	74,575.00	—	—
Total .	78,500		280,637.50		111,862.50
Added saving					111,862.50
Total cost to consumers			392,500.00		

Under the supposition upon which this table has been made up, the farm land within the area of supply gets a situation value of from Kr.4.50 down to Kr.0.50 per acre, according to its distance from the centre, totalling Kr.111,862.50. The most remarkable thing which this table shows, is that the

¹ The Norwegian krone is worth about 1s. 1½d. in the normal exchange. The force of the table and of the figures is their relative and not their actual value; and they can be more easily checked as they stand than if translated into English.

greatest aggregate gain does not fall on the land which is nearest to the centre of exchange. The greatest gain is in the middle belt, and the gain in the belt between 8 and 9 km. is actually twice as large as that of the inner circle, although the saving of freight per quarter, Kr.4.50, is nine times larger than the saving, Kr.0.50 per quarter, in the outer belt.

It will be less economical for the inhabitants, whatever form the supplying area of the city may have, other than that of a circle; for any other form will add to the length of the distance over which some of the wheat must be transported. If the area has approximately the form of a circle, it grows as the square of the radius, and, in all cases, the area of the distant districts exceeds that of the near districts at least at this rate. It will be observed that the saving of freight or the rent value of the land aggregates:

In the 5 inner belts	Kr.60,837.50
„ 5 outer „	„ 51,025.00
Or a total of	Kr.111,862.50

Rent of land has been explained thus: The most fertile land has first been occupied; when the demand for agricultural products increases, recourse must be had to less fertile land, and the price of the products must rise to make the cultivation of the inferior land pay, and the higher price will consequently leave an extra margin of profit on the better class of land. But whether fertile or barren, the land on a great unoccupied prairie will yield no rent before the number of settlers on it has become so large that an exchange of commodities between them can begin, and it will take some time before this exchange can be carried so far that a concentration of production and a consequent division of labour can begin. When this happens one place or another on the prairie will gradually develop into some sort of a centre of exchange, however insignificant, in a commercial circle, however small. From this centre an increased activity will gradually expand, and this activity will give a value to the surrounding land. The rent value of a particular piece of agricultural land will be a function of the maximum freight, which must be paid on agricultural products to secure to the centre a sufficient supply, and of the situation of the land,

reckoned from the centre. Fertile land will have a higher value than barren land everywhere within the circle of commerce, but the situation acts as a determining factor of land value equally upon fertile and barren land, and land which does not lie within any circle of commerce commands no value, no matter what its quality may be.

The fertility of the land may, however, influence the land value in a general way. If a big town, which needs a great supply of foodstuffs and other agricultural products, is situated in a fertile country, it is not necessary to draw the last part of its supply from so distant districts as when the country is barren. In the case of a fertile country, the land near the town, although fertile, will therefore not rise so much in value as would be the case if the country were less fertile. This consideration shows clearly that it is not the more or less fertile nature of agricultural land, but its situation in relation to the centre of exchange which determines its value.

Experience proves that when the farmers of a country meet with a better demand for their products, there will be, after a while, a general improvement in the cultivation of the land; and it is not difficult to find the explanation. The farmers of land in the neighbourhood of a growing city obtain in the city market the same price for their products as those farmers whose land is situated nearer to the circumference of the circle of commerce, although it costs them less to transport the products to the market. They therefore obtain a gain over and above the ordinary profit on the capital which they have invested in the land.

On wheat, for instance, the farmers in the inner circle would have, according to my table, an extra profit of Kr.4.50 per quarter, and as long as the average yield per acre was only one quarter, this would give an acre of land a rent value of the same sum. This extra gain would induce the farmers to spend more capital and labour upon the land to make it yield more than before, in order to reap this extra gain on a larger quantity; and the extra gain due to saving on the freight would similarly, but to a less and less extent, act as a stimulant upon all the belts of the supplying area.

Let us suppose that the production was gradually increased

over the whole of the area of which I have given a schematic description, reaching an output of 4 quarters per acre in the inner circle. I have worked out the following table :

	Area	Output per acre	Total output	Freight per qr.	Total freight	Saving per qr.	Saving per acre	Total saving
	Acres	Qrs.	Qrs.	Kr. ¹	Kr.	Kr.	Kr.	Kr.
Inner circle	785	4.0	3,140	0.50	1,570	4.50	18.00	14,130
Belt 1-2	2,355	3.7	8,713	1.00	8,713	4.00	14.80	34,852
„ 2-3	3,925	3.5	13,737	1.50	20,605	3.50	12.25	48,079
„ 3-4	5,495	3.0	16,485	2.00	32,970	3.00	9.00	49,455
„ 4-5	7,065	2.7	19,075	2.50	47,687	2.50	6.75	47,687
„ 5-6	8,635	2.5	21,587	3.00	64,761	2.00	5.00	43,174
„ 6-7	10,205	2.0	20,410	3.50	71,435	1.50	3.00	30,615
„ 7-8	11,775	1.8	21,195	4.00	84,780	1.00	1.80	21,195
„ 8-9	13,345	1.5	20,017	4.50	90,076	0.50	0.75	10,008
„ 9-10	14,915	1.0	14,915	5.00	74,575	—	—	—
Total	78,500		159,274		497,172			299,195

This table is, I frankly admit, very fantastic, but I intend it to show the tendency of the stimulus to increased production which the situation of the land, giving it a rent value, exerts. Whether the gain which those farmers obtain, whose land is situated in close proximity to the centre, actually induces them to increase their production from 1 qr. to as much as 4 qrs. per acre, is immaterial, if only the fact is recognized that the growing demand for wheat and the increasing rent value of the land have a tendency to stimulate production and increase the yield per acre, and also, that there will be a greater increase of the production on land nearer the centre than on land nearer the periphery of the area of supply.

If the reader will compare the table on page 118 and the above table he will observe that on my suppositions the production of wheat on the entire area of supply has been increased from 78,500 qrs. to 159,274 qrs. When the production increases to this extent, one of two things will occur. Either the supply will exceed the demand by nearly 100 per cent., in which case the price of wheat will fall heavily. It will be seen that with the increased output the districts to a radius of 6 km. can produce 82,737 qrs., and if the consumption of the town remains

¹ See note on p. 118.

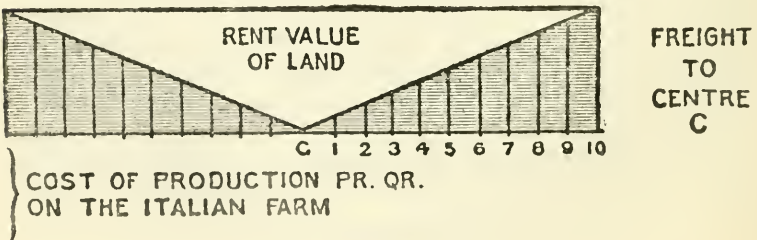
stationary, those districts are sufficient to supply the entire demand. The price will therefore fall at least by Kr.2.00, or the difference in the freight between 6 km. and 10 km. There will thus be a saving for the townspeople of at least Kr.2.00 per quarter on their whole consumption, or, say, Kr.157,000.

Or the town may have grown so much in the number of inhabitants and their opulence that 159,000 qrs. of wheat are needed instead of only 78,500 qrs. If such a quantity had been produced with the old yield of only 1 qr. per acre, the area of supply must have been widened to a circle with a radius of about 14 km. (= 615 km.² = 153,750 acres). The freight from the circumference would have risen from Kr.5.00 to Kr.7.00 per quarter. This would have involved an extra expense to the townspeople on the whole of their wheat supply of 159,000 × Kr.2 or Kr.318,000.

The circumstance that the products of the land near the centre can be marketed with less transport cost than that part of the supply which must be brought from the farthest distance, gives a rent value to the adjacent land. This rent value acts as a premium on the production on this land, and to the extent of the increase of production which is thereby stimulated, the rent therefore protects the townspeople who would otherwise have to pay a higher maximum freight in order to attract a sufficiently large supply.

I must, however, make one reservation. To obtain a larger yield per acre it is necessary to invest more capital in the cultivation, and unless the yield increases proportionately with the increase of capital, a part of the saving of freight due to the situation of the land must be applied to bring the profit on the increased agricultural capital up to the average rate, and only the balance of the saving of freight is rent value due to the situation.

The table on page 118 may be rendered graphically thus :



When Rome had grown so large that the corn supply had to be drawn from very distant districts, and the price therefore became very high, it was a matter of great concern, both to the individual citizens and the Government, to prevent the price from rising still higher. In the Rome of the Empire the problem was finally solved by importing corn in great quantities from Egypt, and sometimes the Emperors even paid part of the price out of their privy purse.

It is more than probable that cereals could be grown with less cost on the plains of Egypt that are watered by the Nile, than in Italy, and it is certain that the transport by sea, although the distance between Egypt and Italy was a long one, was much cheaper than cartage overland from the more remote parts of Italy. Wheat from Egypt might therefore be landed in Rome and sold with a profit at a lower price than could be accepted for Italian wheat from the more remote parts of the peninsula. This competition with Egyptian corn ruined the ancient husbandry of Italy, which had been largely based upon the cultivation of corn for the Roman market; the land went out of tillage, and the corn fields were converted into grazing land.

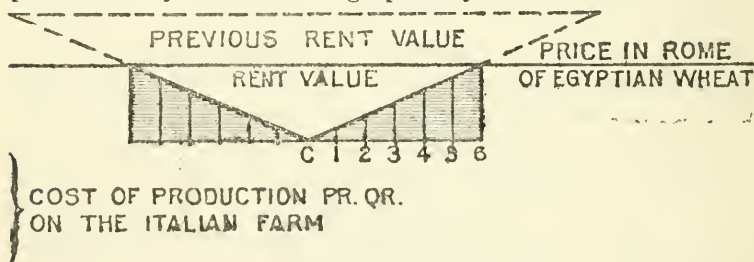
I will attempt to show in detail how this competition worked upon the rent values in Italy. Let us suppose that the cost of growing 1 qr. of wheat in Egypt was Kr. 1 less than in Italy, and that the total cost of transporting 1 qr. of wheat from the fields in Egypt to Rome was only Kr.4 compared with a maximum cost of transport in Italy of Kr.5 per qr. Under these suppositions the Egyptian wheat could be sold at Kr.2 per qr. less in Rome than before, and those districts in Italy from which the freight was more than Kr.3 per qr. must cease sending their wheat to Rome.

The area of the Italian supply would thereby be reduced from a circle with a radius of 10 km. to one of only 6 km.—or from 314 km.² to 113 km.² The belts outside of the 6 km. radius would lose entirely the rent value, which their corn export to Rome had previously given them, and in those districts which could continue sending wheat to Rome the rent value would be reduced thus :

	Production Qrs.	Freight per qr. Kr.	Saving of freight per qr. Kr.	Total saving on output Kr.
Inner circle .	3,140	0.50	2.50	7,850
Belt 1-2 km. .	8,713	1.00	2.00	17,426
„ 2-3 „ .	13,737	1.50	1.50	20,605
„ 3-4 „ .	16,485	2.00	1.00	16,485
„ 4-5 „ .	19,075	2.50	0.50	9,537
„ 5-6 „ .	21,587	3.00		
Total	82,737			71,903

Before the Egyptian competition the saving of freight in this district amounted to Kr.237,377, and the difference, or what the farmers would call their loss, was therefore not less than Kr.165,474. If a part of the saving was required to bring up to an average the profit on the capital invested in wheat-growing, the rent value of the land would be still more reduced. As a matter of fact the Egyptian competition caused a complete revolution in the agriculture of Italy.

The influence of this competition upon the foregoing suppositions may be rendered graphically thus :



Within the area of supply of a large centre like Rome the price of wheat will everywhere be ruled by the market price at the centre. If the area consists of 10 belts of 1 km. each, and the freight from the circumference to the centre is Kr.5, the price at 6 km. from the centre will be Kr.2 per qr. more than a price which would cover the ordinary profit and cost of production, because at 6 km. there is a saving of Kr.2 in the cost of the freight to the centre. The farmers whose land is situated only 6 km. instead of 10 km. from the centre will not sell their wheat locally for less money than they can obtain by sending it to the centre.

If a smaller centre of exchange is formed within the area of supply of the centre A, which we will call B, at a distance of 6 km. from the large centre, if, for instance, a small town is built at this place, or some kind of manufactures are started, the consequence will be that the inhabitants of this new centre must pay for their wheat Kr.2 per qr. more than the price current outside the area of supply of the great centre. Moreover, if the place B grows in importance, and its inhabitants cannot obtain a sufficient supply of wheat in their immediate neighbourhood, but must draw it from more distant districts, there will be formed a system of concentric circles of supply round B just similar to those which surround A. Should the number of inhabitants in B become so large that they must have an area of supply with a radius of 3 km., the result will be, that the market price in B will advance by the cost of transport over 3 km. or Kr.1.50 per qr. over and above the Kr.2.00 addition which is the result of the attraction of the great centre. In the inner circle round B the rent value of land, on which 1 qr. of wheat is raised, will be Kr.3.00 instead of Kr.2.00, in the second belt Kr.2.50, and in the third Kr.2. The influence upon the land of the establishment of a secondary centre of exchange within the area of supply of a great centre is exactly the same as if the situation of the land had been changed so that it came nearer to the centre. Each subsidiary centre of exchange which develops as a result of a new concentration of production, has the effect of adding to the situation or rent value of the agricultural land in its neighbourhood. The greater the number of local centres of activity within the area of supply of a great centre, the more evenly will the rent value of the land be distributed over the whole area. The result will be that the production of agricultural products will everywhere be greatly stimulated, and not only in the districts near the great centre.

The paramount division of labour, viz. into agricultural production in the country districts on the one side, and concentrated production of manufactures in the towns on the other side, which is so beneficial to both sections of humanity, would finally come to a standstill if the cost of foodstuffs

and other raw materials were to rise indefinitely in the centre, by a constant increase of the cost of transport; for the cost of food in the towns would then finally be so high as to out-balance the advantages which can be derived from the minute division of labour which the concentration of production makes possible.

The advance of the market price in the centre, which added rent value to the near land and stimulated agricultural production, was also a powerful stimulus to the introduction of more economical means of transport, and to international trade. The fall in the market price in the centre, which resulted from a cheapening of transport or the importation from countries with lower cost of production, made the continuation of the growth of the centre of exchange possible, but this fall at the same time reduced or extinguished altogether, temporarily or permanently, the situation value which the land near the centre of exchange had previously acquired.

The importation of Egyptian corn to Rome caused a crisis in the agriculture of ancient Italy similar to the crisis which the importation of cheap corn from the United States caused in Europe in the three closing decades of last century.

One circumstance which contributed not a little to intensify the crisis was that Rome had grown in population and importance so abnormally, that it had prevented the growth of the other towns of Italy. The Italian farmers therefore became dependent upon one great market, and when they lost this market owing to foreign competition they had not sufficiently powerful local markets to fall back upon.

I have attempted to prove that the origin of the ancient towns was the desire to trade, which permitted a concentration of production, and I have attempted to analyse the influence of the growth of the towns upon the rent value of the surrounding agricultural land.

In Rome and other small states of Latium the land was originally divided into small holdings amongst all the free families, the patricians, and the same system probably prevailed in the whole of the country where Italic races had settled. But when Rome began the conquest of Italy, the aristocracy, composed of the patricians and the wealthy

plebeian families, managed to secure for themselves the greater share of the land in the conquered parts of Italy which was sequestrated from the previous owners. This land-grabbing tendency gave rise to nearly all the internal struggles during the Republic, which invariably ended with an increase of the proletariat. During the period when the aristocracy of Rome, under the leadership of the Senate, conquered the world, the economic structure of their State constantly deteriorated, the few became immensely rich, and the multitude constantly sank lower. Under the incessant wars the soldiers, who were led from victory to victory, gradually lost their patrimony, the land, and being at last released from military service, had no option but to go and swell the ever-growing proletariat of Rome.

In the Italian provinces this process of alienating the rural population from the ownership of the land did not at first proceed so rapidly ; there is evidence that the demoralization which set in early in Rome itself, was for a long time unknown in the rest of the peninsula. But the competition of the Egyptian corn, which was needed for the feeding of the Roman proletariat, no doubt broke the economic power of resistance of the small freehold farmers in the provinces, and thus tended to complete the disenfranchisement of the rural population of the whole of Italy.

During the centuries which preceded the final downfall of the Empire, the common people everywhere sank into a state bordering upon serfdom, and the ownership of the land was crystallized, during this time and during the invasion of the barbarians, into those large estates, cultivated by tenants on the metayer system, which still prevails so largely in Italy. In this evolution, which has continued for more than 2,000 years, the crisis caused by the corn competition from Egypt was only an incident, which, though serious, would hardly have had such lasting and evil consequences, if other and more deep-seated causes had not been working in the same direction. It is this system of land tenure in Italy which is largely the explanation of the great poverty of the masses of that beautiful country ; it may be traced back to original defects in the constitution of the Roman State. This tragic, and at the same time fascinating theme has tempted me to

try to give, by a deductive method, an analysis of the manner in which the competition from Egypt must have accelerated the aggregation of the ownership of the land in the hands of a few families, by depriving the small and poor owners of land of the rent value which it had previously acquired. The same law which in the ancient world gave land near the centre of exchange a situation value by the saving in the cost of transport, is in force under modern conditions ; but these have become exceedingly complex with great and rapid changes. It will therefore be necessary to make the modern rent question the subject of a very detailed examination.

When it is recognized that land obtains a rent value solely as a result of concentration of production, division of labour, and exchange of commodities or services, it will be obvious that circumstances which materially alter the conditions of agriculture, trade, and industries, must also have a profound influence upon rent values.

The discovery and the subsequent development of the New World have fundamentally changed the conditions of human existence.

The modern industrial methods with power machines, which were originated in England in the last three or four decades of the eighteenth century, have been internationalized during the nineteenth century. Innumerable improvements in productive methods have been invented, and the efficiency of labour has greatly increased.

The first steamboat was run in 1807, the first railway train was started in 1829 ; the railways of the world to-day have a length of more than 1,000,000 km., and the tonnage of ocean-going steamers and sailing vessels in 1912 exceeded 30,000,000 net tons. The telegraph which now encircles the globe many times was invented in 1820, and the telephone is of quite recent date. When it is also remembered that cheap postage was not introduced before the beginning of last century, and that cycles, automobiles, and aeroplanes have been invented and perfected in the memory of the younger generation, it will be obvious that the means of communication have been completely revolutionized during the hundred years which have passed since the close of the Napoleonic wars.

These three circumstances: the development of the New World, the internationalization of power machinery, and the total change of our means of communication, have, separately and all three combined, completely changed the conditions of trade. The most remote parts of the globe are nowadays in daily commercial intercourse with each other, and exchange their commodities with more ease than was possible in the ancient world even for neighbours.

The ever-increasing national and international trade has multiplied to an almost incredible extent the facilities for concentration of production, and the division of labour has been carried far beyond what Adam Smith could have dreamed of.

The rent value of land is a function of different variable quantities; when these factors are multiplied in number, and their variations are enormously magnified, the resultant function must likewise become intensely changeable. As a matter of fact the rent value of land has become very changeable. The enormous rise in the value of building ground in the great cities has attracted most attention, but a much more remarkable phenomenon has been the slower but steady rise in the value of vast tracts of land in countries or districts only recently opened up by modern means of communication. In the aggregate the rise in value of this class of land amounts to much more, measured in kroner, or pounds, shillings, and pence, than the sensational sums which are sometimes paid for small plots of building land in London or New York.

Land has risen in value enormously during the last hundred, and particularly during the last fifty, years; and upon the whole this advance, itself a sign of progress, has assisted the progress of our race materially. But before I continue this subject I must ask the reader to follow me in a short survey of the conditions of trade and industry at the commencement of the twentieth century.

CHAPTER VI

THE EVOLUTION OF IDEAS

THE sources of our civilization are ideas—productive, artistic, moral, and abstract ideas. These have all been conceived in the brains of imaginative individuals. The first vague conception must be developed by the mental efforts of the originator into more or less definite ideas; to make them a force in the evolution of mankind he must project these images or ideas outside of his own brain. He must either materialize them, by making things in their image, or he must give his ideas form in words or musical notes to make them recognizable by his fellows.

The brain of man is so organized that when he sees an object shaped with a purpose by somebody else, he recognizes this purpose as human, and a brain activity is set up in the observer that proceeds on precisely the same lines as those which directed the hand of the maker of the object. The same applies to ideas which are not solidly materialized in matter, but whose fleeting shape comes to our mind through the medium of words or musical tones, which make us think the same thoughts as the person who expressed his meaning by these words. The propelling force in human evolution is the imagination of the few who can create original ideas, but these would not bear fruit if the mental work of absorbing them did not cultivate the mind of the recipients.

In the process by which mankind has slowly reached its present stage of civilization, the invention of a new tool, or the creation of an original artistic idea, has often played as important a rôle as the discovery of a scientific truth or the evolution of morals. In the infancy of our race, when the faculty of reasoning was as yet but imperfectly developed, it was indeed only simple art which, besides utilitarian objects, could appeal to the undeveloped mind of primitive man.

It is beyond doubt that the fundamental technical inventions have been made in various parts of the globe independently of each other, which is strong evidence of the homogeneousness of human nature. But the races differ as much in regard to the faculty of invention and receptivity towards new ideas as individuals in the same race vary in this respect. Not only have epoch-making ideas originated earlier in some races than in others, but their general reception and utilization has been rapid in some and slow in other places. Hence the endless variety in the evolution of civilization in the many different races and nations of the world.

New ideas have been the active element in human evolution, or, what sometimes amounts to more, happy combinations of previously current ideas in such a manner, that new, complex, and more fruitful ideas have been the result. When a fluid crystallizes, the process does not begin simultaneously in all parts of it, but at certain points called the crystallizing points, from which the action gradually extends to the whole solution, if chemically suited to the process. The evolution of human civilization proceeds in a similar way; new ideas or new combinations of ideas are created in the brains of individuals, and where there is sufficient receptivity these gradually permeate society, and, altering the way of thinking, they create, when conditions are favourable, a new civilization.

Experience teaches us that wealth is not only not a necessary condition for creative geniuses to do their work, but that, on the contrary, most of the practical inventions, epoch-making, artistic, and scientific achievements, are due to humble and comparatively poor men, and few of the great moral and religious teachers of mankind have been rich men. But for ordinary mortals a certain freedom from economic worries seems to be necessary, if they are to open their minds freely to new ideas, and be able to devote sufficient energy to their assimilation. This is particularly the case when it is a question of absorbing and studying different ideas with the object of combining them to ideas of a composite and higher order. It follows that rapid progress in civilization is hardly possible, unless there are at least some members of society who enjoy a certain amount of leisure, which presupposes a previous

accumulation of wealth. In a thinly populated country, devoid of easy means of communication, new ideas do not become so rapidly disseminated, and population cannot grow rapidly in a country which has not yet accumulated a fair amount of capital. This is another reason why the progress of civilization must necessarily have been very slow until some wealth had been acquired.

Until the second half of the eighteenth century, machinery in the modern sense, that is to say, machinery driven by other power than human muscular energy, was almost unknown, and therefore so also was production on the heavily capitalized modern system. There were also in ancient times factories which employed a large number of labourers, but these worked with tools and implements which were set in motion by their own muscular energy. One must suppose that the ancient manufacturers stood in much the same relation to their labourers as for instance the so-called cotton manufacturers in Manchester in the pre-machinery days. These were not manufacturers in the modern sense, but factors, who supplied the domestic industry with raw materials, and who had finishing works, where the cloth of the hand loom was dyed and finished. In these finishing works most of the processes were executed with manual labour and with simple and relatively inexpensive implements. The superiority of certain famous manufacturers in ancient times depended in all probability, not upon special advantages in regard to the machinery or implements, but on the hereditary skill and experience of the manufacturers and their labourers, and on the possibility of obtaining a sufficient division of labour to make it more skilful.

There were, as far as I can understand, only two fields of industry in which a high rate of capitalization would be possible under ancient conditions, viz. the cultivation of the land, and the mining industry. The land might be better tilled, drained, and planted, and better stocked with cattle and implements, provided the proprietor had sufficient capital; and as to extensive mining operations, they required, of course, large capital, relatively more so, perhaps, in ancient times than to-day.

In an industry in which the capital investment is only

light when compared with the number of labourers, the percentage of profit on each transaction may be very high, and yet the sum of annual profit will be much smaller than in a modern heavily capitalized industry with an equal number of labourers. As it is the sum of profit which the capitalist can gain in the course of the year which is at his disposal either for consumption or for fresh accumulation of wealth, there could not be a rapid growth of wealth among the ancients from the income of their industrial investments, the more so as the majority of the people, those of the working classes who were not slaves, earned miserably low wages, and their consuming power was therefore exceedingly limited.

The people who lived round the Mediterranean in the countries which have been the cradle of our civilization had, however, one source of great profit which made it possible for them to acquire great wealth, viz. international trade. As soon as they had developed their civilization so far that they had learnt to build vessels by which they could navigate the sea, and had domesticated animals of burden, they could at one time transport large quantities of goods, representing in one shipment a great capital; and when trading with other countries they could take advantage of the variations between one country and another in the cost of production, due to climatic and other natural conditions. Saving of labour by the use of capital being at all times the source of the profit on capital, there was in those days, when a few countries which had advanced earlier than others and had become comparatively rich were surrounded on all sides by barbarians, an enormous profit to be made on a barter trade with the barbarians. Moreover, since much capital might be invested in each venture, there can be no doubt that international trade placed immense wealth at the disposal of the capitalists in Egypt, Assyria, and Babylonia, Syria, Asia Minor, and Greece, at a time when Rome had not yet been founded.

At a very remote period the people of the Mediterranean had founded cities. The number of towns in Greece at the time of the Trojan war which Homer enumerates is surprisingly large, although they were small and unimportant in comparison with the mighty Egyptian and Assyrian cities. The excavations which have been made on the sites of ancient Babylon,

Nineveh, and other Assyrian and Babylonian cities, as well as in Egypt, have confirmed the historic records of the vast size and importance of these places, which flourished as far back as 4000 B.C., and of which some at least were founded in the Stone Age.

In these countries were united all the conditions which make rapid cultural evolution possible: populous cities in which new ideas could find quick reception, and a sufficiently numerous class of wealthy and leisured people who could afford to employ artists to embellish their towns and palaces, and men of science to explain to them the riddle of existence. It is no accident that civilization, the word which has come to denote in modern languages human culture, is derived from the Latin word for a town citizen.

I have remarked on more than one occasion that I am not using the word ideas in any metaphysical sense, but simply to denote the image in the mind, or the idea which must precede every purposeful action or reasoning of the human brain. The ideas must have begun with the simplest and most obvious relations of cause and effect from which the conception of purposeful action could be derived, but out of one idea new ones would grow, and finally man's concrete ideas developed into abstract ideals.

The leisure which the wealthy classes in Egypt and Chaldea enjoyed gave them the opportunity of carrying very far that pursuit of investigation of surrounding matter for curiosity's sake, which seems equally inherent in the nature of man as the ability to conceive a purpose which is to be attained by using certain means. They attained to great heights in the world of ideas when they learned, for instance, to measure time accurately by observing the stars. Having left tangible objects behind them in their wanderings among the images of their brain, they conceived the idea of an invisible God who governs the visible world that hands can grasp. Out of their conception of God grew their ideas of man's relation both to God and to other men, or perhaps their contemplation on moral problems went on side by side with their speculations upon divinity. A study of religious history demonstrates the fact that a very important part of our religious conceptions and ideas of to-day is an inheritance from the philosophical

and religious systems of the Egyptians and Chaldeans, a striking example of how human ideas, when once invented and expressed, live their own life independently of their originators. A material analogy is the fact that a certain part of the gold which is current in the world at the present day actually was in use in Babylon, having been melted and re-melted many times.

I am not going to make any digression into the domain of philosophy, I only wish to explain how I conceive that evolution of human reasoning which, starting with the plainest ideas of utilitarian objects, may carry us to the greatest heights of abstruse speculations. Abstract speculations which have not utility for their object, but the satisfaction of our curiosity or desire to know the truth, cultivate more than anything else the mind and strengthen its capacity for combining ideas. Even when such speculations do not attain their intended goal, they may therefore indirectly bring great gain. The mind becomes trained and enriched, and conceptions of practical utility become possible which could not have occurred to an untrained mind. Thus theoretical speculations sometimes lead to, and always prepare the way for practical inventions of the most far-reaching importance. Let me mention such ideas as weights and measures, or that wonderful invention of coined money. Money has become to that degree part and parcel of our mental equipment that few people ever stop to think of it or try to imagine a world without coins. The idea of using weighed and stamped pieces of precious metal to make payments is at once the acme of the fantastic and of common sense. A similarly wonderful idea was the invention of conventional signs to denote words by letters, and the Arabian invention of numerical signs. What mighty steps forward in the evolution of our civilization were thereby taken!

How one idea grows out of another is well illustrated in the history of art; the three Greek orders of the columns may be cited as an example. Our cherubs and winged angels are the descendants through many changes of the Assyrian winged figures. And from Persia came the idea of the arch which was so extensively used in the Roman architecture, from which modern architects have borrowed it.

The idea of the brotherhood of men was originally quite foreign to the ancient mind. The citizens of each state, frequently comprising not more than a small city with its immediate surroundings, considered all others as their enemies. *Homo homini ignoto est lupus*, as the Latin saying had it; and the morals and religion of the ancient peoples did not go beyond a crude polytheism. The fundamental ideas of the Greek civilization, liberty, harmony, and rationalism, have nevertheless become an integral part of our culture. Law, justice, and equity, as well as ordered administration, were the gifts of the Romans to mankind. For the first time in the history of the world the famous Pax Romanorum brought into close relations the nations which peopled the countries that were known to the ancients. The splendid Roman roads and the safe navigation of the seas facilitated the most lively intercourse, commercial and otherwise, between the different parts of the vast Empire. Ideas which had previously remained national, became widely known and generally accepted, and a world-embracing universal civilization was the outcome, in which Greek, Roman, and Asiatic ideas mingled, carried from one country to another by citizens of the same Empire who all spoke either Greek or Latin or both.

But below the brilliant surface this highly developed ancient civilization was rotten to the core, for it suffered under the curse of slavery.

How deeply the idea of the lawfulness of one man subjecting another man to serve him as a beast was rooted in the ancient way of thinking can best be measured by observing the position which the early Christians took towards it.

Slavery was not unknown to the Germanic peoples who became the heirs of the Roman Empire, and it has been practised in all parts of the world. But except in the Southern States of America slavery has not anywhere been the general and fully recognized basis of the economic organization of a highly civilized society as it was in the ancient world.

The planters of the Southern States in the United States of America were a noble, highly refined, and cultured race, but they were unable to feel the wicked sinfulness of the slave system which they practised. Many of the worst abominations towards the slaves which are recorded from Rome were per-

petrated on the black, and they found defenders even among ministers of the Christian Church. This proves that the idea of subjecting fellow men and women to slavery is compatible with high intellectual culture, and, what is more surprising, with finely developed moral feelings; and it helps us to understand how difficult it was for the ancient world to rise above its deeply-rooted prejudices in this matter.

In our own days, almost, there have been honourable and well-meaning people who have been fully convinced that their country would go to the dogs if the working classes were to get high wages. These and other considerations must be put forward to explain, if not to condone, this great blot on the ancient civilizations. The time was not yet ripe for the greatest of all human ideas, that of the liberty of the individual.

There were, however, also powerful economic causes which tended to perpetuate not only slavery but also the great poverty of the masses in the ancient state. The countries which were comprised in the Roman Empire are favoured with a mild climate which makes it possible for the poor to subsist on very little, and the employers could have recourse to slave labour when free labour became dear. Slaves are not as a rule efficient labourers, and there is no reason to believe that those of the ancient world were exceptional in this respect. But the rate of capitalization in the industries was generally very low, and when the profit on each unit of the output is high, a fairly large sum of money may be earned per annum in spite of the low efficiency of the labour employed. Experience from countries where the rate of capitalization in the industries is still low—for instance, India, China, and Japan—shows that under such conditions the employers of labour continue for generations to pay almost incredibly low wages.

It was, therefore, nearly impossible for men of the working classes in the ancient states to accumulate capital out of their wages, as may be done in modern societies. The land in republican Rome belonged to the aristocratic families, the patricians; and the few plebeians who succeeded in getting rich, employed their capital in wholesale trade, in farming the taxes, and in usurious money transactions, by which they could amass great fortunes. During the wars which subjected the

rest of Italy to the yoke of Rome, the wealthy families secured for themselves—*per fas et nefas*—the lion's share of the land in the conquered districts which was made *ager publicus*. And after the conquest of Egypt there occurred a crisis in the agriculture of Italy analogous to the one which happened in Europe when the wheat from the virgin prairies of America began to pour into the markets of the Old World. The cultivation of cereals in Italy no longer paid, and the small farmers, who had depended upon it, became ruined, which still further added to the accumulation of landed estates in the hands of the optimates. The small farmers either sank into actual slavery or they drifted into Rome to swell the multitude of citizens which had to be fed at the expense of the State.

In the Rome of the Empire there was therefore a large proletariat without any prospect of ever liberating themselves from abject poverty. They lived in the midst of a much larger population of slaves, conquered in the interminable wars or purchased in the great slave markets of the East. High above this ignorant and debased multitude a small oligarchy, refined, but for the greater part egoistic and utterly immoral, rolled in senseless luxury, for the satisfaction of which the provinces were fleeced and finally completely ruined.

The majority of the Roman citizens had fallen so low that it was only the name which distinguished them from the unfortunate slaves; and they had neither the moral nor the intellectual strength to emancipate themselves, much less their fellows in misery, the slaves. When the wars of conquest ceased there was a gradual decline in the supply of slaves, and during the breakdown of the Empire, accompanied as it was by a rapid economic decline, the majority of the poor citizens became gradually mixed up with the large slave population in that nation in bondage which one encounters in the first centuries after the barbarians had taken possession of Italy and the rest of the Empire.

Slavery, with its brutalizing influence upon society, was no doubt the main cause of the decline and fall of the Roman Empire. But if at that period the industries could have reached to a high rate of capitalization, this would in all probability have led to the gradual abolition of slavery, because only free and well-paid labour is efficient.

Among the ancients the dominating idea was the omnipotence of the State. The liberty of the individual is an idea which the Celts and Germans brought with them at the period of the Migration of the Nations. They also had serfs, taken in war, but these were comparatively few. The members of the tribes or clans, into which the Celts and the Germans were divided, were freemen.

The idea of freedom was not new, for the glorious Greek civilization was founded in the free republics of the mother country and in the equally free colonies, and the Romans had a goddess whom they called *Libertas*. But both in Greece and in Rome freedom was a political conception. It referred to the organization of the State, and the liberty of the individual as now understood was almost unknown to the ancients. It is characteristic that one of the meanings of the Latin adjective *liber* is free as a citizen in contradiction to the state of a slave. Not only the numerous slaves, but also the poor who formed the vast majority in the ancient states, had no influence and therefore also very little real liberty.

How great is the difference between liberty, as the ancients understood it, and the fierce spirit of personal freedom among the old Germans, is best realized by a study of the old Norse Sagas in comparison with the grand harmony which breathes through the ancient literature.

When Augustus had founded his Imperium on the ruins of the Republic, in the fulness of time as the Bible says, Jesus Christ was preaching the Gospel of Love and the brotherhood of men. These are not only the purest and greatest thoughts which have ever been expressed, but they were revolutionarily new, and in many ways quite subversive of the civilizations and political systems which had previously existed in the world.

The Græco-Roman civilization of the Augustan era was undermined by the demoralization and depravity of the few for whose benefit it had been created, and in spite of its universal character it was totally unfit to absorb and assimilate the new and radical ideas—the personal freedom of the individual and the brotherhood of all men. These were as new wine in old bottles, and they must eventually devour that cycle of ideas which was the soul of the ancient social organization.

But what a massive strength in the Roman Empire, the final

outcome and most perfect representative of the civilization of the ancients! It took nearly 500 years to break it down, and before it fell to pieces it had set its impress indelibly on the new culture which was to take its place. The barbarians who overturned it had become more or less Romanized, but they had purchased at a high price their civilization, such as it was: the freedom of the individual had all but disappeared, the simple teachings of the Galilean had become crystallized into a Church monarchy, and in the countries which had been parts of the Empire the majority of the people had sunk down into a villanage which was not much better than slavery.

The great store of knowledge which had been accumulated by the ancients was almost scattered to the winds, and a new civilization had to be slowly created. Rome was nearly destroyed, most of the cities which had once been flourishing were ruined, and in Western Europe the industries had almost completely disappeared. Mankind was obliged to go back to the primitive mode of satisfying its wants, viz. to produce in the household practically everything which was to be used in the family. Money was extremely scarce, and when rates of wages are occasionally recorded from the early Middle Ages they seem quite incredibly low.

Under such miserable conditions it was not to be expected that the common people would be able to improve their dreary lot; they seemed to be there only to be ill-treated by their lords, who were hardly less ignorant than the poor victims of their tyranny.

It was international trade which gave civilization a new start, and a home in the cities of Italy, South Germany, and Flanders, where the growing wealth created a new leisured, luxury-loving aristocracy who learnt to appreciate art and literature. Through Byzantium and the Arabians the Italians became acquainted with the ancient literature, and that wonderful expansion of the human mind, the Renaissance, was the result.

Scientific investigations were resumed, and at the end of the Middle Ages rationalism once again, as in Greece, taught man to disregard authority in his search for truth. A diligent study of the writings of the ancients and of the Arabians, and re-

searches into surrounding nature, prepared the way for a great number of inventions of the utmost importance. The inventions of the sextant and the compass were destined to help the explorers in the fifteenth century to find the way to India and America. The great accumulation of knowledge which has taken place during the last few centuries, and the rapid dissemination of new ideas which is so characteristic of modern civilization, would not have been possible if the printing press had not been invented. Like so many other epoch-making ideas, the art of printing was invented piecemeal. Wooden plates, on which the words of a whole page were engraved, had long been in use for printing, and it was this which suggested to Gutenberg the idea of using blocks on which each letter was separately carved. This idea, which to us seems as simple as Columbus's egg, has effected a transformation of human civilization.

The industries were resumed and made the accumulation of wealth increase. The skill of the workmen grew, and many improvements were gradually introduced in the industrial processes. The smelting of iron was improved by the use of better and larger hearths. Wind and water mills were largely introduced ; the silk industry was transplanted to Italy.

At the time when Columbus landed in America the civilization of Western Europe had therefore been greatly developed, and it was already richer than the ancient culture : it contained more ideas, and many which were more fruitful than those which were known to the contemporaries of Augustus. In a great many directions human ability had become more highly developed, and the prospects of further progress were much better.

But in one very important respect the civilization which meets us at the beginning of the modern era was not much superior to that of Rome. As in the Græco-Roman period, knowledge and culture were the privilege of a few, and the majority of the peasants and of the industrial labourers remained very poor, ignorant, and superstitious. There were two worlds which had hardly anything in common : the upper classes, who had all the sunshine of life, and the lower classes, *la canaille*, who ought to be thankful when they had anything to eat. The result was that the civilization of the few became in many ways

artificial, and those who enjoyed it egoistical and narrow-minded, while the common people were ignorant and too often disgustingly coarse and brutal. The causes of this unsatisfactory and unfortunate trend of evolution were partly political, but mainly of an economic nature. The majesty of the State was a conception which the rulers of Western Europe found fully developed in Roman law, and by degrees they established in all their countries a despotism under which theoretically only the Sovereign was a free and independent man. He was compelled by the necessity of obtaining servants to give the aristocracy a certain latitude, but the common people were absolutely subject to his will and whims. Many circumstances helped the monarchs to place the nations in fetters, but they would not have borne them so long as they did had not the majority of the people been powerless because of their poverty. The causes of this poverty were the same as in ancient Rome. The rural population had been for the greater part deprived of the ownership of the land, and in the industries the low rate of capitalization kept wages down.

The giant which will ultimately liberate the majority of mankind, the labouring classes, from the yoke of poverty, and from political and economic tyranny, had not yet grown strong enough for the task. The name of this giant is Capital.

The discovery of the New World and of the sea route to India did not at once bring the lower classes of Europe much benefit. Upon the whole these discoveries did not immediately produce such a great change in the conditions of our continent as most people, who judge by the final results, are perhaps inclined to believe. It brought wealth to the adventurers, and the possession of the American silver mines gave to the Habsburg dynasty the wherewithal to strengthen their despotism. But the new order of things gradually changed the trade route of the world, and this eventually shifted the centre of international commerce from the Mediterranean to the Atlantic. During the time of Queen Elizabeth were laid the foundations of the mercantile predominance of England upon which has been built, in the course of three centuries, the world-embracing Empire of Great Britain and Ireland.

I must again emphasize that it is only by international trade that great capital accumulations are possible in a state of society where production is still carried on at a low rate of capitalization. For fear of not having been sufficiently explicit before, I must explain that it is because it is possible to employ a large capital in the foreign trade, when one ship may take in one journey a great quantity of goods, that a large profit is also obtainable, whereas the industries, being carried on with simple and inexpensive tools and implements, did not give scope for the investment of a great capital, and on account of the low wages labour was not efficient. Consequently the turnover was relatively small, and the annual profit did not amount to very much in comparison with the income of the merchants who carried on the foreign trade.

England, which had been mainly an agricultural country, began her industrial evolution at about the same time as she entered upon her modern commercial career ; but the industry was mainly a domestic industry carried on in the houses of the labourers, and without motive power of any kind. The manufacturers were not obliged to invest much money in works and machinery ; the simple tools which were used—a smith's anvil, hammer and tongs, a spinning wheel or a weaving loom, and so on—belonged as a rule to the workpeople. The so-called manufacturer provided the finishing works, which were not expensive, and his capital was mainly required for procuring the raw materials, and for keeping the necessary stock of the finished products. The production was extremely limited in proportion to the number of workpeople, when compared with the output of modern factories, because nearly all the work was still executed with human muscular energy without any mechanical motive power.

The trade between Europe and the Far East had previously followed very indirect and expensive routes, and when the ocean routes could be used the saving was so great that the goods could be sold much cheaper than before, and yet leave an enormous profit to the English traders and their Dutch rivals in the seaborne commerce. In the long run the English, having the best geographical situation, succeeded in obtaining the first place in the oversea trade, which soon yielded a great and rapidly increasing income. The stability of the English

political institutions and the insular isolation of England which prevented foreign attacks, greatly favoured the accumulation of wealth, while the Continental states were constantly disturbed by devastating wars.

The trade between Europe and the other continents had remained within a very narrow compass, and was mainly restricted to expensive luxuries, as long as it was carried on overland or via Egypt and the Red Sea. For the first time in the history of the world an international trade with the Far East and other oversea markets, comprising cheap commodities in large quantities, had become possible, and the nascent industries of England received thereby a great impetus. The modern evolution of England is due to the constant interaction between international commerce and the industries; the Lancashire cotton industry is a typical instance of their mutual interdependence. Liverpool was exceptionally well situated to receive the products of North America, among which cotton-wool soon began to play an important *rôle*. This gave rise to an industry which in a short time assumed comparatively large proportions, because an ever-increasing market for the cloth was found in the Far East as well as in other countries. The cotton industry flourished partly because it was unfettered by the guild-like regulations which were an inheritance from the Middle Ages in several of the older branches of industry. Both manufacturers and workpeople in the "cotton-wool" industry became in the course of a few generations very efficient, which tended to facilitate the efforts of the exporters to increase the trade in the products.

But it was not only in the manufacture of cotton goods that the English excelled; the textile industry flourished in most of its branches. At one time England had exported its wool to be used by the Flemish manufacturers, but afterwards the woollen industry of England had been so much developed that the home-grown wool was hardly sufficient. The constantly growing demand of the export trade for industrial products caused an increase of the population in the industrial districts, but wages remained low because no fundamental change in industrial organization took place. The industries remained domestic industries, from which low wages and sweating seem to be inseparable.

Such were the conditions in the commerce and industries of England about the middle of the eighteenth century. By that time the demand for industrial products for export had grown to such dimensions that it had become very difficult to cope with it, and how to increase the output was a problem of the most vital importance. Allured by the hope of high reward, a number of men with imaginative brains began, almost simultaneously and in different branches of industry, to try if it were not possible to invent means by which the industrial production might be increased.

In the course of their history the English have shown that they possess to an exceptional degree the faculty of induction. A number of industrial inventions were made in the years from 1760 to 1829 which have completely changed the material conditions of human existence. It is not an accident that most of these inventions were made by compatriots of Bacon, Newton, Hume, Adam Smith, Darwin, and Lister, or Shakespeare.

The iron industry had always been dependent upon the supply of charcoal, and in England it had shifted from Sussex because its forests had been consumed, to Shropshire and the Forest of Dean, where both iron ore and wood for its smelting abounded. From the sixteenth century, however, attention had constantly been directed to the problem of how to substitute coal and coke for charcoal in the different processes of the iron industry. Many men had in vain worked on it, but a solution of the difficulties was gradually approached, and the family of Darley were finally able to obtain practical results with the new process. The turning-point in history of the iron industry was in 1760, in which year the Carron Iron Works were established, with blast furnaces for smelting iron with coal, or rather coke. The progress of this new process was, however, not very rapid before 1790, when the steam engine was first employed for producing the blast. In 1796 the output of iron was nearly twice as large as it had been eight years previously.

Cart of Gosport made two important inventions. In 1793 he obtained a patent for a process to make wrought iron from pig-iron with coal in an open hearth, and in the following year he obtained a patent for rolling rods, instead of hammering them as had previously been done.

The new blast furnaces made the iron industry independent

of the supply of wood. The iron works of Wales, which had been abandoned long before for want of fuel, were resumed because there were waterfalls for producing the blast. Later on, when steam engines were introduced, the iron industry became independent also of waterfalls, as blast furnaces could be started wherever the presence of iron ore and coal made it convenient. Very important centres of industrial activity developed in the South of Scotland, in Wales, and the North of England, at places which had previously been almost uninhabited.

The increasing demand for fuel caused the first serious efforts to be made for creating a cheap inland communication. The Duke of Bridgewater constructed in 1761 and the following years two canals near Manchester ; and, these paying very well, the example was followed in other parts, and soon a network of canals was created all over the country. Shortly afterwards the highroads were also improved, which led to a great increase of the inland traffic with a corresponding fall in the cost of transport.

The spinning of fibres was done with the hand spindle up to the year 1530, when Jürgen, a German, invented the spinning-wheel. This was the simple and inexpensive implement which was still used by the cotton-spinners of Lancashire ; and the carding was done by hand, until Richard Arkwright, a barber by trade, adopting the ideas of various older inventors, produced a complete set of machines for roving and carding, and, using old patents which had lapsed, he erected in 1771, at Nottingham, a cotton-spinning mill which was driven by horse power. Afterwards he used water power at his new mill at Crawford in Derbyshire.

In 1775 Crompton invented another spinning machine called the "Water Mule." It got this name because it embodied the ideas of the first attempt at a spinning machine made by Paul, which had 250 spindles and was driven by mules. By the help of the water mule it became possible to spin such fine yarn that it might be used for producing muslin. After the introduction of these inventions, roving, carding, and spinning were concentrated in mills, and it was only the weaving which for some time still remained a domestic industry.

The result of these happy innovations was to give an un-

dreamt-of impetus to the cotton industry. The only limit to the increase of the output was the restricted supply of water power, and the anxiety on this score was removed when the steam engine was introduced in the mills.

Newcomen's primitive atmospheric steam engine, patented in 1712, was extensively employed for pumping water in mines. In 1768 James Watt improved it by inventing the steam slide. At first the use of this engine was restricted to mines, but in 1782 an engine was supplied to Arkwright for driving his spinning mill. Although the industrial utilization of steam power was at the beginning rather slow, the number of steam engines in use in Great Britain and Ireland in the year 1810 was computed at not less than 5,000.

The introduction of machinery was not so rapid in the woollen as in the cotton industry. In the sixteenth, seventeenth, and eighteenth centuries the possession of the raw material had given England practically a monopoly of the woollen industry. But towards the end of the eighteenth century there was great anxiety as to the future supply of wool, for the production of wool in England was supposed to be declining, whilst the consumption constantly increased. In 1797 some Spanish merino sheep were imported by Captain Waterhouse to Australia, where the quality of the sheep was thereby greatly improved, and sheep farming on an extensive scale was soon begun. Captain McArthur is mentioned as the first "squatter." The importation to England of Australian wool, which was 190,000 lbs. in 1820, had reached in 1826 1,000,000 lbs., and in 1828 twice as much, while the quality steadily improved.

Between 1790 and 1792 Edmund Cartwright perfected machinery for carding wool, and a somewhat similar machine was invented by William Taplis. The workpeople who were engaged in the woollen industry, fearing loss of employment, tried to stop the use of machinery by riots, and petitioned Parliament against it, but without success. Spinning of wool by machinery was, however, delayed, because a hand implement, the "Jenny," had been universally introduced, and did good work. But Benjamin Gott of Leeds introduced machine spinning, and in a short time the mill production killed the domestic spinning industry.

Calico printing was one of the crafts which the Huguenots

had introduced into England. The printing was done by hand with small engraved wooden blocks. This laborious process was replaced in 1785 by the invention of printing from engraved cylinders.

These and numerous similar inventions of machinery to replace handwork, and the use of the steam engine, which was introduced in all branches of the textile and other industries, killed the domestic industries, and caused the industrial production to be concentrated in the big modern manufacturing towns, and there was an enormous increase in the producing capacity of the British industries. The wealth of England, due to her flourishing international trade, was great enough to make it possible to raise capital for the many costly manufacturing establishments which were started, and the export trade was able to find an outlet for the products, no matter how fast the output was increased.

But at the beginning of this industrial revolution the inland communications did not keep pace with the rapid increase of the industrial population and production. Traction on wooden rails had long been used in the mines and iron works. The planks were afterwards strengthened by nailing iron plates on the wood, but the wagons were driven by horse power. The idea of using in a modified form the newly-invented steam engine for traction on such rails occurred to several inventive brains, but the great honour of having successfully materialized this fruitful idea belongs to George Stephenson, who first introduced steam traction on a mining railway, Stockton-Darlington in 1823. The project of building a regular railway for steam traffic was well received, and Parliament gave its permission in 1825. The aim of the promoters of the first railway line was to obtain a better mode for the transport of heavy goods, and they do not seem to have had any idea of the great speed which might be attained. Stephenson, who had won the prize which was offered for the best engine, did not himself expect to reach more than fourteen miles per hour. The opening ceremony of the Liverpool-Manchester railway in 1830 made a deep impression on the public mind by the very great possibilities of the railway engine. Since that modest beginning, ninety years ago, railway construction has

been going on in every part of our globe at an always accelerating rate; and in the year 1912 the railways of the world had reached the stupendous length of 1,081,488 km., or about 27 times the length of the equator, representing a capital outlay of, probably, considerably more than £10,000,000,000! The man does not exist who has imagination enough to grasp fully the meaning of these figures.

The first ship which was driven by steam power was the tug-boat *Charlotte Dundas* on the Clyde in 1803. Regular steam ferry traffic was first opened on the Hudson River between New York and Albany in 1807, but further progress was at first rather slow. It was not before 1820 that steamers were used between Dublin and Holyhead, and it was not before 1838 that the first transatlantic voyages were attempted. In 1835 steamers ran regularly between Bombay and Suez. Since 1860 the steamship tonnage has grown at a constantly increasing rate. In the year 1912 the tonnage of ocean-going steamers in the world was not less than 30,500,000 tons register.

In the evolution of mankind there are two epochs that overshadow all others by the far-reaching consequences of the innovations which were introduced. The first of these is the period when man learnt to use metals.

The second period covers the seventy years between 1760 and 1830, i.e. from the first great mechanical inventions in the second half of the eighteenth century, and until George Stephenson had started the first railway train drawn by a steam engine.

It is not too much to say that the revolution in the material condition of human life which has been caused by the great industrial inventions and the complete change of our mode of communication, is so thorough, that the chasm which divides us who live to-day from all previous generations can be compared with no other fundamental change than the one which consisted in the substitution, some 6,000 years ago, of metal for stone as the material for man's tools and implements.

The nineteenth century has generally been extolled as the "century of inventions," and most people think that nothing so marvellous has ever been accomplished; but this is an error

and a very great exaggeration. The inventions of last century were certainly many, ingenious, and far-reaching in their practical consequences. But they must be considered as a direct continuation, amplification, and improvement of those truly original productive ideas which had been conceived in the last decades of the eighteenth and the first decades of the nineteenth century.

Let us pause for one moment to consider the matter somewhat more closely. That a waterfall might be used as a source of power had been known for centuries. Waterfalls had long been employed where the power might be used directly—for instance, to drive flour mills, hammers in iron works, and, since the middle of the sixteenth century, to drive saw mills. It had also been observed that heated water was a force; and the primitive Neweomen contrivance, though it could hardly be described as a steam engine, had been in use in mines since 1712. For thousands of years it had been known that there were forces in nature, but except using the wind for propelling ships, and the isolated use of waterfalls and Newcomen's machine, nobody had dreamed of the possibility of harnessing these forces. Production, upon the whole, continued to be carried on with human muscular energy as the only source of power until the time of the many English inventions at the end of the eighteenth century.

The new idea which was conceived simultaneously by a number of imaginative men was this, that a power which is generated at a given spot, and which moves in one direction—for instance, the rotation of the driving axle of a water wheel—may be transmitted to other places by the use of suitable gearings, and that the motion may be transformed, also by the use of suitable gearings, so that other motions than the original one at the source of power may be generated; as, for instance, when the rotation of the mill axle is transformed into straight movements which go backwards and forwards, or the motion may be made slower or faster than that of the generating power.

Transmission and distribution of energy from a natural source of power, and transformation of the direction of the motions which are caused by this power, were all that were needed for replacing human muscular energy in production

by the energy of natural powers. The materialization of this idea required, however, an imaginative effort which allowed the inventor to conceive the thought that the movement of the human hand in the industrial manipulation of the raw materials might be imitated. Precisely in the textile industries the movements of the hand and fingers of the operative are exceedingly small, of which anyone may satisfy himself if he will watch a woman who is spinning with a spinning-wheel, or a person who weaves on a hand-loom. In all essential points, machine production, whether carding, spinning, or weaving, consists in giving the raw material movements which are identical with those which are executed in handwork. The energy transmitted to matter or the movements of the raw material being the same, the work done, whether by machine or hand, has the same $\text{kg.} \times \text{metre}$ value. The great saving of labour which is obtained by the use of machinery is due to this circumstance, that the human labour is reduced to feeding the machine with raw material and watching the operation, while the natural power does the actual work through the machine, and turns out as much work as a number of hand labourers could execute in the same time.

Particularly in the beginning of this inventive epoch, when there were no previous examples or analogies to guide the inventor, it required imagination of a most remarkable degree, combined with the keenest faculty of observation, to conceive *a novo* the many mechanical contrivances which were necessary to give the various parts of the machinery just those small and complicated movements which were required in order to obtain the desired motions of the raw material. The first machines which were constructed were clumsily designed, if we compare them with the newest and most perfect machines of the same class. This cannot cause surprise; it is, on the contrary, very remarkable how frequently it happened that the first inventors were able to hit upon designs which have been retained in all essential points to our own day.

To us, who have grown up surrounded by machinery of all kinds, and who have seen railways and steamships from our earliest infancy, it requires the strongest effort to realize that a little more than 150 years ago none of these things existed, or to picture to ourselves what the conditions of human

life were without them. We have grown to that extent accustomed to the use of machinery, that whenever circumstances occur in which mechanical operations may suggest themselves as desirable, and no existing form of machinery can be used, we consider it the most natural thing in the world that an engineer is commissioned to design a machine for this special purpose.

There was nothing in their surroundings which as a prototype could suggest to those great pioneers who inaugurated the era of machinery how the forces of nature might be harnessed. They had to conceive the idea of its possibility out of their own consciousness.

By materializing this idea they created a new and most powerful stimulus in human evolution, just as that being did who shaped the first crude stone axe, or the Stone Age man who first hit upon the mixing of copper and tin by which he obtained a previously non-existing metal—bronze.

The men who invented spinning machinery, the steam engine, etc., had not the many advantages which are to-day available to an inventor: technical education was practically unknown, and natural science was little developed in comparison with what it is to-day. No doubt they experienced many disappointments and disheartening failures during their experiments. But it must be remembered that they stood on the shoulders of the two hundred generations which had lived and worked and died since the metals were introduced. An immense store of knowledge had been accumulated in those 6,000 years, the reasoning faculty had been greatly developed, the convolutions of the brain had increased, the number of ideas, simple and complex, which together constitute civilization, had grown enormously. It is no detraction from the honour which we owe these great inventors to say that it would have been quite impossible for them to conceive the idea of machine production if they had not been surrounded by innumerable products and ideas which were an inheritance from, and a result of the labour of, humanity during the preceding thousands of years. We must, in fact, say that these inventions were some of the endless consequences of the introduction of the use of metals.

The immediate practical consequences of the idea of

machinery, driven by natural power, were no doubt much greater than those which followed directly upon the discovery of metals. But let anyone who glories in the achievements of our own time begin to ponder over that mystery in the evolution of our race, the original discovery of bronze, and he will, perhaps, become a little more modest in his praise of modern progress. It is when pondering upon this mystery, and keeping clearly before our mind's eye that this discovery was made by the Stone Age man, that an understanding begins to dawn upon us of how the ideas, conceived by individuals, have irresistibly determined the evolution of human civilization, but also of how slow this process has hitherto necessarily been.

The number of ideas which in their combination constitute the civilization of each epoch has been constantly growing, and evolution may therefore become more and more rapid; but an ideal civilization requires a harmonious development of the various ideas which together form its subject-matter.

As regards the technical conditions of human existence, there has been a greater change between the years 1760 and to-day than the change, great as it was, when mankind entered from the Stone Age into the Bronze Age; but political and moral evolution have hardly kept pace with the transformation of our material conditions. There is particularly one great field of human relations, that of capital to labour, or employers to employed, where the necessary readjustment to fit in with the material revolution has not yet been completed. Humanity, when entering upon the age of machinery, took over as an inheritance from the past the deeply-rooted conception that the majority of mankind existed mainly in order to serve a small minority, the aristocracy and the capitalists. The production of plums was not so great but that the few thought that they must keep them all for their own mouth; and the most curious thing about it is, that the many did not seriously think of disputing the justice of this arrangement.

The production of good things has been so much enlarged that everybody can get a fair share when there is a just division. The great conflict which has been shaking society during the last two or three generations has been concerned with the principles which are in future to govern this distribution of

the products of human labour. This conflict has frequently assumed forms which remind one of the struggles between the patricians and the plebeians in Rome ; but this is, I am convinced, only a passing feature, and upon the whole the readjustment of the social conditions has proceeded much more peacefully than might have been anticipated, when the magnitude of the problems involved is considered. Everything points to an evolution which will eventually do away with such worn-out distinctions as patricians and plebeians, or, to use a modern expression, upper and lower classes.

In all past ages the possession of capital gave the owners the privilege of making the masses produce luxuries for them, and because of the low rate of capitalization the employers were under no compulsion to pay wages higher than just sufficient for the labourers to exist.

To-day, perfect machinery has increased the productivity of labour so much that the output cannot be consumed except by the millions, and the sum of capital which is invested per labourer is so large, that the rate of profit would have dwindled almost to the vanishing point if the efficiency of labour had not increased many times in the course of the last century. Moreover, as there is only one means of securing efficient labour, viz. the payment of adequate wages, the economic conditions of production have compelled employers to pay constantly advancing wages.

As the rate of capitalization will increase automatically, this is a guarantee that wages will advance still further, corresponding with increasing efficiency. In this way the growth of capital will finally emancipate the masses from that poverty to which they have—in all previous ages—been doomed.

In spite of occasional disturbances, and the ignorance, prejudices, and passions of both employers and labourers, the rationalistic tendencies of modern technical and economic conditions have already done wonders in the direction of transforming our social ideas.

The future will belong to those who are able, industrious, and economical, not to those who, by a mere accident, have inherited wealth or political power.

CHAPTER VII

THE TRANSITION

THE English inventions of power machines and the steam engine, which ushered in a complete revolution of the productive methods, were made on the eve of the French Revolution. This upheaval and the twenty years of the Napoleonic wars which followed, threw Europe into political and economic turmoil. Although England took part nearly the whole time in those wars, she was able, thanks to her insular position, to continue her industries without interruption, and in spite of many drawbacks British foreign trade flourished. On the Continent, on the other hand, there was hardly a country which was not, at one time or another, the seat of actual operations of war. While England could carry on a very profitable trade, those countries which would under more favourable circumstances have become her competitors in industries upon the new system, were so weakened or well-nigh ruined that they were compelled to buy manufactured goods from England instead of attempting to rival with her in producing them.

For a long time England, therefore, became the sole manufacturer of the world, not only because nearly all the most important inventions had been made here, but quite as much because the political and economic conditions of this period deprived the Continent of the means of following the example of England.

A few facts are sufficient to show how completely the other countries were prevented from taking part in the industrial development which set in with full force in the British Isles. It took, even in England, some time before the steam engine came into general use, but it is computed that in 1810 there

were already 5,000 in use in the United Kingdom. In Prussia the first steam engine was started in the mining district of Westfalen as early as 1788, but the next did not come before 1822, and it was not before 1830 that steam engines became general in that country. About 1810 there were only about 200 in use in France. From these figures one must conclude that power machines and the new industrial methods were only very slowly transplanted to the Continent.

When peace had at last been concluded, in 1815, it took a long time before the losses of the long war period could be made good; and at the time when the Continental countries had become financially strong enough, so that they could at last begin to think of adopting the English methods of production, about 1830, they had not at their disposal the easy means of transplanting new industries which are now available. Technical schools did not yet exist, and there were not at that period such a large number of engineering firms to apply to as there are to-day. The British manufacturers were jealous of anybody whom they feared as a possible competitor. A hundred years ago England was, relatively more than to-day, the mistress of the oversea trade. This secured ever extending markets for British manufactures, which would not at once have been open to Continental manufacturers.

England had thus a start in the modern industrial race in which all the odds were on her side. One may say without any exaggeration that British industries did not meet competition, worth speaking about, before about the middle of the nineteenth century. It was not before the marvellous development of the German industries which has taken place within the last thirty years, that the British manufacturers began to feel seriously the competition of a foreign rival.

Because Great Britain and Ireland were thus, during two or nearly three generations, practically alone in the industrial field under modern conditions, it is not more than what might have been expected that the new social problems in connexion with the industrial production first presented themselves in that country.

A review of the six thousands of years, from the beginning of the Metal Age to 1760, gives one an impression as if the

methods of production had remained almost stationary during this long succession of years. It was only at very long intervals that the methods were changed, and that new tools or implements were invented. It is characteristic that the hand-spindle was not replaced by the spinning-wheel before 1530. I must again lay stress upon the fact that during this long part of the history of mankind there were not introduced methods of production, except in the mining industry and agriculture, which required the investment of a great fixed capital in tools or implements. It is of the utmost importance to remember this because of its bearings upon the wage question and the entire status of the working population.

This stability completely disappeared after the introduction of power machines. In the period of about 150 years which have since elapsed there has been a never-ceasing restlessness in the industrial world. A new method of production has scarcely been invented and put into practice before it has been replaced by another and still more improved one. The manufacturing firms who in previous periods might require primitive mechanical appliances generally had them produced in their own establishments with the help of their own artisans, or the village blacksmith was requisitioned to render his assistance. The only branch of the engineering art which could lay claim to be considered scientific was practised by the officers who built fortifications, roads, and bridges, or the architects who were entrusted with the building of large churches or other buildings of unusual size, which presented special difficulties in their construction.

As soon as a demand sprang up for complicated machinery, engineering became a distinct profession. At the beginning of the epoch those manufacturers who succeeded in inventing or acquiring a new and advantageous machine no doubt tried to keep it secret, and to prevent competitors from learning its use. But this attempt soon failed, mainly because it was necessary to employ engineers to produce the machinery, and these had the greatest interest in making the new inventions as widely known as possible, to obtain as many customers for such machines as they could. Whereas Arkwright and the other original inventors had had as a rule no education in the science of mechanics, and no previous training or experience

in the art of designing or constructing machinery, so that their original machines were often clumsy in the extreme, the engineering firms which were established became experts in their particular trade. Working hand in glove with the industrial manufacturers, they were soon able to introduce great improvements, both as to design and workmanship, in the machines of various kinds which they were commissioned to execute. It was not long before they began to bring out new and improved machinery on their own initiative; thereby they became a distinct and very important factor in the ceaseless industrial progress which has been so characteristic of the three last generations.

After the idea of using power machines, and mechanical appliances generally, to save labour, had been conceived, and had been materialized in some of its applications, manufacturers and engineers had their eyes opened, and every process of manufacture was closely scrutinized to see if there were not room for changes and improvements.

In the textile branches weaving with hand-loom continued to be a domestic industry for some time after the carding and spinning had become concentrated in big factories. But after many attempts the power loom was invented; in the cotton industry it became a success in the year 1822.

Perhaps the iron industry has benefited more than any other branch of industry by restless scientific investigations and the practical enterprise of the nineteenth century. Let me mention a few of the most important improvements in the iron and steel manufacture. In 1828 Nelson obtained a patent for the use of heated blast, instead of cold blast, in the blast furnaces, which invention was first utilized in the Clyde Iron Works. The Bessemer method, the joint accomplishment of Sir Thomas Bessemer and the Swedish iron master Göranson, dates from 1856. The Siemens-Martin open hearth steel process was introduced in 1865, and the Thomas-Gilchrist application of the Bessemer process to phosphorous iron in 1879.

By these and many minor improvements which have been from time to time introduced, the production has been increased, labour has been saved, the consumption of coals and other raw materials has been reduced. In Great Britain and Ireland

the consumption of coal per ton of iron has been reduced, according to Mulhall, thus :

	Ton of coals per ton of pig-iron				
1796	6.0
1806	5.0
1840	3.5
1870	3.1
1875	2.5
1882	2.2

At the present time it probably does not exceed 1 ton. The world's production of iron was given by Mulhall in tons thus :

1830	1850	1870	1871-80	1882
1,468,000	4,280,000	10,550,000	14,230,000	19,820,000

In the year 1913 the world's pig-iron production amounted to about 77,000,000 tons, of which the United Kingdom, the United States, Germany, France, and Belgium, produced 68,500,000 tons, or about 90 per cent. of the whole. In 1913 the production in the United Kingdom reached 10,500,000 tons, while it had in 1740 only 59 iron works with an average production of only 294 tons, or altogether not more than 17,346 tons !

These isolated examples must suffice to give an idea of the feverish activity and the great achievements in this branch of industry, which may be considered as an indication of what has gone on, more or less, in all branches of industry, through the imagination of the inventors and the shrewdness of the industrial manufacturers.

Machinery changed completely and at once the conditions of employment, killed the domestic industries, and concentrated the industrial production in great towns. There was a rapid growth of the wealth of the country, greater probably than had occurred in any previous period of human history. But against this great gain must be set the terrible sufferings to which this transition subjected the labouring classes.

England possessed at the end of the eighteenth century a comparatively large industrial population which had acquired considerable skill in their various trades. At all times and in

all countries labourers in the domestic industries have been badly paid, and England was no exception to this rule; although daily wages were considerably higher than in other countries, they were very low when measured by the modern standard of wages.

Machinery seemed at first destined to cause a further serious deterioration in the lot of the British working classes. The machines only required careful attendance, and no previous skill or experience was needed; even a child might, it was supposed, tend a machine. The capitalists who started the new mills could thus obtain very cheap labour, because they were not compelled to employ skilled artisans. The children of the labourers became the most dangerous competitors of their parents. It has been common to ridicule the English labourers for their futile attempts to prevent the use of machinery. But from their point of view this opposition was quite rational; the era of machinery at first brought the working classes of England very great hardships, which lasted during the first and a great part of the second generation after machine production had become general.

There would be much better cause for severely condemning the callous and short-sighted egoism of the capitalists in their dealings with the working classes during this trying period. In their excuse it must be said that they did not, any more than their labourers, understand the new principles which were involved in the change which was taking place in the relation between capital and labour. This ought not to cause surprise, for they stood on the threshold between two epochs in the evolution of our race, and did not comprehend the changes that were coming.

Up to this time it had been accepted as an axiom by everybody, including the working classes themselves, that human existence was so arranged that it was the lot of the many to toil for the benefit of the few. There had been occasional outbursts of rage, when the condition of the masses became, from one cause or another, exceptionally bad, but in the past ages nobody dreamt of a time when it would be possible for the whole nation to live in fairly comfortable conditions. It was not in irony that Adam Smith constantly used the expression, the labouring poor, in speaking of the working classes.

It would have been more than human, if the new class of capitalists who started the mills for machine production could have taken another view than the one which had the sanction of thousands upon thousands of years. They considered themselves justified in buying labour as cheaply as possible, and to obtain this they employed child labour extensively and without the slightest remorse.

The manufacturers had not yet grasped the fundamental difference between *labour* and *work*, and were tied to the time-worn illusion that if only the daily pay to their workpeople were low enough they also got their work cheaply done. During centuries the State had attempted to regulate wages in the different branches of industry. This system of State interference had been renewed just after the era of machine production had begun. The Combination Act of 1799, with amendments in 1800, confirmed the old and very unjust principle in English law which made all attempts on the part of the working classes to combine, in order to obtain higher wages, punishable as a crime. As a rule, these Acts do not seem to have been enforced, but severe sentences were occasionally passed, e.g. against the scissor grinders of Sheffield, 1816, and the calico printers of Bolton, 1817. Thus these Acts tended to intensify the feeling of misery and abject helplessness which lay like a nightmare over the lower classes.

The almost universal view of the relation between capital and labour which was at the bottom of these and similar enactments, received full confirmation from the science of Political Economy as it was taught by a number of prominent English writers at the end of the eighteenth and in the beginning of the nineteenth century.

Malthus and Ricardo were in agreement on these two hypotheses: (1) that the power of the earth to yield food is narrowly restricted; it may be increased by the use of greater capital and more labour, but the yield will be on a diminishing scale in proportion to the increased means of production; and (2) that the population of a country has a tendency to increase more rapidly than the food supply; there is therefore always a danger of over-population and misery.

At about the same time James Mill propounded his wages theory, according to which circumstances determine the rate

of wages with which the labourers must be satisfied, and which they cannot get advanced by any effort on their own part.

The theories which these writers had propounded became the view of all educated and well-to-do Englishmen. About fifty years after Malthus, Ricardo, and James Mill, Stuart Mill published his standard work, *Principles of Political Economy*, in which he stated the law of wages thus :

“Wages (meaning, of course, the general rate) cannot rise but by an increase of the aggregate funds employed in hiring labourers, or a diminution of the competition for hire ; nor fall, except either by a diminution of the funds devoted to paying labour, or by an increase in the number of labourers to be paid.”

The employers could not wish for a better defence when they opposed the demands of the labourers for higher wages or otherwise improved conditions. But the social and industrial evolution of England during the last fifty years of the nineteenth century was destined to demonstrate that the famous *iron law of wages* was nothing more than the empty offspring of the brains of a few very clever men who did not fully understand the new world in which they lived. Their law of wages has, however, caused permanent mischief, for it was upon this unstable fundament that Karl Marx built his quasi-scientific system on which modern socialism still rests.

The new machines increased production so much, that if there had at once been established so many mills that all the labourers who were previously engaged in the domestic industries could have been employed, it would not have been possible at once to find a market for such a great quantity of products. The saving of labour due to the improved machinery resulted, therefore, in temporary loss of employment for a large number of the working classes, and this misfortune was intensified by the extensive use in the mills of children and unskilled labourers instead of skilled workmen.

This evil consequence of the introduction of machinery would have been to some extent alleviated if that part of the industrial population which was thrown out of work could have found temporary or permanent occupation as farm labourers in the country. But at that serious juncture in the history of England this safety-valve did not exist. Never has the United Kingdom

suffered greater detriment from those unjust land laws which have made a privileged few the owners of nearly the whole of the soil of these beautiful and fertile islands. The freehold or yeomen farmers, who had once been the mainstay of England, had almost completely disappeared in the course of centuries, and owing to the prevalent practice of entailing the land of the aristocratic families, who could not personally cultivate their extensive estates, it had become the almost universal rule that the actual cultivation was in the hands of tenant farmers. The uncertainty of this form of tenure prevented such an intensive cultivation as would have been possible if the land had been split up in a large number of freehold properties, which would have happened if the system of entail had not prevented it. There can be no doubt that if England had possessed a numerous class of small freehold farmers at the time when machinery increased the industrial production, the food production of the country would have increased *pari passu*, and a large number of labourers would thereby have been attracted to the country districts. But the low pay and bad housing of the farm labourers, both at the beginning of the nineteenth century and to-day, is a standing disgrace to the British nation.

Not only did the English land system prevent at that critical moment a migration of the labouring population into the country, but the landlords were also the owners of the land upon which the towns were built. When these began to grow rapidly as a result of industrial development, the landlords availed themselves of the opportunity to exact from the working population enormous rent for miserable slums, and the manufacturers did not exert themselves seriously to save their labourers from being thus fleeced.

In the interests of the landlords, Parliament repeatedly passed corn laws which created an artificially high price for wheat; and during the Napoleonic wars, when there was no importation, the landowners earned large incomes by the rise of the rent. To prevent a fall of the price after the conclusion of peace, it was enacted that the importation of wheat should be prohibited unless the price went above 80s. per quarter. The cost of living was thus increased for the poorly-paid working population in the interests of a small class of rich landlords.

In order to raise sufficient income to pay the interest upon the enormous debt which had been contracted during the long war period, everything which successive Chancellors of the Exchequer could think of was taxed, and the list of customs duties comprised many hundred articles. This indirect taxation lay as a crushing burden upon the working classes, who had no voice in the matter, being without the franchise.

Under this burden of excessive taxation, and the vexatious obstacles to international trade which the customs barrier presented, it was impossible for trade and industries, even with the help of the new inventions, to prosper or to increase rapidly during the first years after the peace of 1815. And in 1837 a severe financial crisis broke out, followed by a set-back that lasted for several years.

All this time the working classes suffered terribly. Employment in the factories was still insufficient, and daily wages remained low. The condition seemed fully to confirm the assertions of political economists that the labourers must be satisfied with the wages which circumstances determine, and while they had little money to buy, every article of consumption was made artificially dear by the enactments of successive Parliaments.

The first thirty years of the nineteenth century was therefore a very dark period in the history of the British working classes ; but although they were outside the pale of the Constitution, having no vote, they had learned as Englishmen to abide by the law, and they hoped to win their rights by peaceful agitation. The new capitalist class, the owners of the industrial establishments, who rejected the old-fashioned ideas of State regulation in the industries, wished to remove all obstacles to the free play of capital in industrial evolution. These men, who have been labelled the Manchester School, had their own interests as their foremost aim, but they were at the same time also in sympathy with changes which might give the working classes, to which many of them had previously belonged, greater freedom and independence. In 1824 the Combination Acts were repealed, and the first trade unions were formed. In 1832 the Reform Act was passed, and in 1839 the Anti-Corn Law League was established. In the teeth of the most determined opposition Sir Robert Peel carried, in 1846, the abolition of the corn duty,

and the United Kingdom of Great Britain and Ireland entered upon her career of free trade.

In the emancipation of the British working classes from the yoke of poverty and the tyranny of the capitalists, which is not yet completed, and which is greatly retarded by the ingrained vices, shortcomings, and ignorance of the working classes themselves, the trade unions have played a very important *role*. The early history of the British Trade Unions will for ever be a shining example of what plain men of the people can attain when they follow common sense as their leading star. It was the growing strength of the unions which gradually taught the unwilling masters that their workpeople had also rights.

But while fully recognizing the great achievements of the British Trade Unions at a critical stage in the modern industrial evolution, this must not blind us to the predominant fact that the change through which human relations are passing has not come about by the will and exertions of individuals as much as through the inherent forces of materialized ideas. When the idea was once expressed and materialized that the productivity of labour may be increased almost indefinitely by taking natural forces into the service of our production, a new and irresistible ferment was added to the evolution of our race, and no human power can stop its action from shaping the future course of our civilization. Willingly or unwillingly, we must all follow a direction which was determined when Arkwright, Watt, and the other epoch-makers conceived the idea of machine production.

The object of all the improvements which have been made in machinery and the other mechanical appliances which were successively introduced into the mills, was to save labour; and there is probably no branch of the manufacturing industries in which there has not been some saving, while in many the cost of production, or, what comes to the same thing, the labour cost, has been reduced to a mere fraction of what it was at the beginning of the machinery era. With the reduction of the cost of production has been, *pari passu*, a corresponding fall in the selling price of the different commodities, which is generally much lower than it was a hundred years ago. The price

of the finished commodities would, however, have been much lower than it actually is if it had been possible to reduce the cost of the production of raw materials to the same extent as has been practicable in those manipulations to which the raw materials are subjected in the manufacturing industries. The inventive genius of the nineteenth century has also been directed towards finding means for changing and improving the methods in the production of raw materials. Agriculture has benefited by the great progress of chemical science, and the United States have shown the way in introducing machinery for cultivating the land and for gathering the crops. Great improvements have been made in the selection of seed, in the rearing of cattle, etc. But although the price of cereals and of meat, etc., has gone down since the great importation of American produce began, there has not been such a great fall as in the cost of the manufacturing industries. Similar remarks may be made as to the cost of producing minerals and their selling price, and all other kinds of raw produce. They have not become so cheap as might have been expected, partly because it has not been found practicable to effect a very great reduction in the cost of their production, and partly because many raw materials have obtained a scarcity value, the consumption having grown more rapidly than the production.

The cost of production and the selling price of the finished commodities do not therefore, as a rule, show a reduction, compared with 150 or 160 years ago, which fully reflects the great reduction which has taken place in the manufacturing cost. Let us suppose that the cost of spinning one pound of cotton yarn with the spinning-wheel was equal to the cost of the raw material, and let us call both 100, or say, that one pound of yarn cost, before the introduction of the first spinning machine, 200. If we further suppose that Arkwright's first primitive machine reduced the cost of spinning one pound of yarn to one-half of that of hand-spinning, and that the manufacturing cost has afterwards been four times reduced by one-half, the spinning cost would on this supposition have been reduced to $3\cdot1$ against 100. If the cost of raw cotton has during the same time not been reduced more than from 100 to 60, the cost for raw material and spinning of one pound of yarn will be reduced from $100 + 100$, or 200, to $60 + 3\cdot1 = 63\cdot1$.

There has been an unbroken chain of improvements in the methods and machinery, by which the cost of spinning one pound of yarn has been constantly reduced. The selling price has also constantly fallen, and the profit on one pound of cotton yarn has consequently also constantly declined. If we suppose that I am right in assuming that the profit has a tendency to be one-half of the saving effected by the improvement which was last introduced compared with the previous method, we get the same table as on page 30.

Cost of spinning 1 lb. cotton yarn					Profit
With spinning-wheel	.	.	.	100	—
„ first spinning machine	.	.	.	50	25
„ improved	„	.	.	25	12·5
„ further improved	„	.	.	12·5	6·25
„ „ „	„	.	.	6·25	3·12
„ „ „	„	.	.	3·12	1·56

This, let it be observed, is the profit of the manufacturer *each time the same sum of labour is spent in conjunction with this machinery.*

A spinning-wheel may to-day be bought for twelve to fifteen shillings. The original spinning machine of Arkwright was a very primitive implement with four spindles only, but it was much more complicated and expensive than the simple spinning-wheel. Since the day when the original spinning machine was ready for use, engineers have been constantly at work on the improvement of the spinning machinery. The cost of producing machines has been much reduced, like the cost of production in other branches of industry. If this had not been the case, the cost of the beautiful and highly complicated roving, carding, and spinning machinery which one sees in a modern spinning mill, would have been very much higher than it actually is. But in spite of the great reduction in the cost of producing machines, due to the progress of engineering, the capital investment of the spinning mills has steadily increased.

A spinning-wheel cannot at one time be used by more than one person, and as it can be bought for twelve to fifteen shillings,

this modest sum represents the rate of capitalization, or the capital per labourer, as long as this primitive method of producing yarn is still used.

A modern spinning mill may employ hundreds or thousands of labourers of various classes. Some work on what we might call the producing machines—the self-actor or spinning machine for instance—some in the power plant, some are outdoor labourers, and so on; but the number of labourers which each mill can employ is strictly determined by the number and character of the machines and the other equipment of the mill. If there are 100 labourers, all told, and the capital which has been invested in the mill amounts to ¹ Kr.100,000, Kr.500,000, or Kr.1,000,000, the capital investment per labourer is Kr.1,000, Kr.5,000, or Kr.10,000, and it is as if each labourer worked with a tool which represents one of these sums. The capital divided by the number of labourers gives us the rate of capitalization.

Some persons might think that the improvement in the engineering art should tend to reduce the rate of capitalization. But this is an erroneous view. In the first instance, the aim of engineers has been to construct their machines so that they can be tended by a smaller number of labourers. Even if the cost of the machine should go down, the capital per labourer goes up when the number of labourers employed on the machine is reduced. As a matter of fact, the machines have not become cheaper than before, because they are so much more perfect, and their production therefore represents much more labour than before. Of this anyone may convince himself by looking at a new railway engine and comparing the same with an old one.

Modern machines are cheap in one sense, when one takes their workmanship into consideration, but they represent a much greater capital than the plain machines at the opening of the machinery era. In some branches of industry the cost of the machines has increased enormously. Some of the newest and biggest paper-making machines, for instance, cost Kr.200,000 or more, and on these big machines only a foreman with two or three assistants in each shift are employed, making a rate of capitalization, calculated on the paper machine itself,

¹ Krone. It is more convenient to leave these round numbers than to change them into English equivalents. See note to p. 118.

as high as Kr.30,000 or Kr.40,000 ; and if the entire capital investment in a paper mill and all the labourers are reckoned, the rate of capitalization is at least Kr.10,000.

But even if the producing machines had become cheaper, which I have shown is not the case, the tendency of the engineers and industrial manufacturers has been to introduce mechanical appliances of all kinds, and machinery of a subordinate character in all parts of the mill : cranes, lifts, railways, machinery for preliminary treatment of the raw materials, sawing mills for making cases and boxes, printing works, etc. etc. All these things represent money ; they help to reduce the cost of the production, but they also contribute largely to increase the capital which must be invested in the mill.

It would be very interesting if it were possible to collect for one or more branches of industry reliable data on which the rate of capitalization at different periods of the machinery era could be calculated. In the spinning industry the rate of capitalization was, when the spinning-wheel was still in use, Kr.12 to Kr.15 ; to-day, in the most up-to-date mills, it probably reaches at least Kr.5,000, and there are many branches of industry with a rate of capitalization of Kr.10,000 or more. I will assume that in the spinning trade the rate of capitalization has grown as follows :

	Fixed capital per labourer Kr.
The spinning-wheel	15
Arkwright's original spinning machine . .	100
Improved " " "	300
Second improvement	900
Third "	2,700
Fourth "	8,100

It is immaterial for the deductions which I am going to draw whether the actual industrial evolution has approximately been as these figures would indicate, if it be conceded that the cost of production, the selling price, and the profit per unit of the production has, as a matter of fact, constantly fallen, and is now very low in comparison with 150 years ago, and

if it be further conceded that this fall has been accompanied by a constant increase of the capital invested, through which the rate of capitalization has now become very large in comparison with what it was when the era of machinery began.

There has been a movement in opposite directions: a constant fall of the sum of profit which can be derived from the quantity of commodities that can be produced with the same sum of labour, and a constant increase of the capital which earns this profit; and the consequence must have been that the capitalists of England at an early stage in the industrial evolution found themselves under an economic compulsion to try, by all means at their disposal, to get more work done.

In the pre-machinery age the labour problem was easily solved; all that the capitalists had to do was to engage more labourers. Under the conditions of domestic industry, these provided, as a rule, their own tools; and as the population increased in proportion as the opportunity of obtaining employment, wages remained low, and rose, if at all, only very slowly. But when a capitalist had invested £1,000 or £10,000 in a cotton-spinning mill, he could not set more labourers to work on his machines than they were constructed for. The only way of getting more work done was to compel or to induce the labourers, who were engaged in the mill, to do, individually and collectively, more work than before.

The first idea of the manufacturers was to enforce excessively long hours of work, and the necessity of obtaining employment compelled the working classes at the commencement of the machine era to submit to almost any conditions. It was during these years of great hardships that the British working classes, with necessity as their relentless taskmaster, learned how to do their work in an industrial mill well. Little by little, the difficulty of obtaining employment lessened somewhat, because there was a constant addition to the number of industrial establishments. Economic progress was irregular, for it was frequently interrupted by commercial crises, due to over-speculation. Periods of good employment for the working classes were followed by periods of slack trade, general unemployment, and much distress. But nothing could permanently check the industrial development of the country; and slowly but surely the conditions of labour improved. This was

partly due to the persistent efforts of the trade unions, who had learned to use strikes as a formidable weapon.

But it would be to form an altogether erroneous estimate of the influence of the trade unions upon the early evolution of the British industries if one were to judge them mainly by the results of strikes. The unions did a much more important, though less easily perceptible, service both to their members and to the industries, by the organization and education of the various trades which they comprised. By almost imperceptible degrees, the "skilled" labourers became conscious of their own status, through the action of their unions, which not only demanded rights of the masters, but also insisted upon the duties of members towards their fellows and their masters. This education of the British skilled labourers through their trade unions, which they had formed unaided, and which were directed by themselves, became a powerful factor in the economic and political evolution of the country. The manufacturers of Great Britain and Ireland have, to a very large extent, come directly from the ranks of the working classes. It may therefore be said that the unions, in their early days, educated not only their own members, but their masters as well. Thus fellow feeling between masters and men, much more than the strikes, paved the way for a gradual improvement of wages, hours of labour, and the conditions of labour generally. That the relation between masters and men by degrees was changed, and became more human, was a new example of the well-known Anglo-Saxon capacity for self-government.

System as the outcome of abstract deductive speculations does not come natural to the British temperament, and there was probably not a single British manufacturer who, at the middle of last century, carried out in his own mind a reasoning similar to the one I have attempted above, viz. that the weight of capital compelled him to pay higher wages in order to get more work out of his labourers. But the masters of those days were, like their successors of to-day, "a shrewd lot," and they knew their men. Without any theory they could see that they could not earn much money unless they could get more work out of their machines, and to obtain that end they felt that they must make it worth the while of their hands to exert themselves. A gradual rise of wages came as a natural

result of common sense, and a compromise between masters and men. In penning these lines I have in my mind the many keen Lancashire manufacturers whose acquaintance it has been my good fortune to make.

It was, however, the misfortune of British industry that piece wages, instead of day wages, were introduced at too early a stage, before either the masters or the men had experience enough for this innovation. This circumstance is at the present moment the cause of a temporary set-back of the progressive movement, not only in England, but likewise in many other countries.

The constant increase of the rate of capitalization finally compelled the manufacturers to be on the look-out for a more rapid increase in the efficiency of labour. And to replace time wages with a system of piece payment presented itself at an early stage of the industrial evolution as a very obvious expedient. The manufacturers calculated the cost of production by dividing the output by the daily wage, and offered the labourers to pay them so much per piece; but both parties to this contract overlooked the fact that the efficiency of labour was still very low. Under the stimulus of the piece payment the labourers soon turned out two, three, or four times as much work as they had done before. But when the manufacturers saw how much the labourers could earn in a day, they at once reduced the piece payment sufficiently to bring the weekly earnings down to a sum which they considered reasonable. So low had the efficiency of labour previously been that the working classes were able to bring their weekly wages, on the reduced piece payment, up to considerably more than the time wages had previously amounted to; and after a while there was therefore a new reduction in the piece payment, followed likewise, in due course, by better earnings. It is clear that if this sort of thing could have gone on indefinitely, the daily wages of the working classes would not have risen much above the low level from which they had started, but to earn as much the labourers would at least have been forced to overtax their strength in order to do sufficient work.

This tendency was, however, not allowed to run its full course; two forces were opposed to it: the trade unions, and the enlightened self-interest of the more intelligent among

the employers. Most of the strikes in the last twenty-five to thirty years have been fought upon piece-work rates.

I have had an opportunity of watching at close quarters the evil consequences which are apt to follow if piece payment is substituted for daily wages at a too early stage of industrial evolution. In Norway a number of cellulose mills were established after 1890. As there were generally no manufacturing establishments in the localities where these mills were started, they had for the greater part to engage what might be termed crude labour, viz. farm labourers or others who had no previous experience in factory work, and whose efficiency was therefore very low. As a consequence, the output of these mills per labourer was for some time small. Most of the managers became impatient, and soon introduced piece payment, with the result that workpeople who had not at all a fatiguing kind of labour, and who had served no apprenticeship or learnt anything, except what they had picked up in the mill in the course of a few years, earned as much as, or more than, for instance, compositors in a printing office who have to pass through an apprenticeship lasting a number of years. Not satisfied with such relatively good wages, there was a few years ago a serious strike in the cellulose industry because the trade unions demanded still higher piece rates, while the efficiency remains comparatively low. One big foreign mill continued to pay daily or weekly wages with the object of gradually educating their labourers before introducing piece payment, and it would have been better for all concerned if this example had been followed by the entire trade.

Piece work should not be introduced before the efficiency of the labourers has reached a fairly high point, when the men and their masters both know pretty accurately how much work an average man can turn out in a day without overtaxing himself. But when a rate of piece payment has once been fixed upon in a bargain, where both sides are fully conversant with the conditions of the work, it should not afterwards be altered as long as there is not a change in the conditions of work. It is the labour cost of the piece, and not the daily earnings of the labourer, which is material to the employer. If the rate has been so fixed that it does not give an average labourer more

than a fair daily wage, it is an extra gain to the employer when some or many of his labourers are willing to work with more than average energy, or are able to increase their efficiency so that they earn more money in a day than the average in their class. The output of the mill is thereby increased, and the profit becomes more than proportionately larger. I remember having once read of a man who reviewed the conditions of the cotton industry of Lancashire. He said : " When I hear that the weekly wages of the labourers in a particular mill are high, I am pretty sure that that mill is doing well financially ; but if there is a mill where wages fall below the average, I am always sceptical about its management."

This is an obvious truth ; provided the rate of piece payment is so adjusted as to give an average labourer a fair daily wage, it is the true rate, and any attempt on the part of the employers to press it below this point must be characterized as an attempt to steal something which is rightly due to the labourers. Conversely, if the labourers try by compulsion to enforce a higher rate, it is an attempt to cheat their employer. In the long run all such attempts, whether by the employers or the labourers, are injurious to both parties, and therefore defeat themselves. Properly fixed rates which are allowed to exert their influence upon the energy and efficiency of the labourers, without any sort of undue interference either from the associations of the employers or the unions, will give the labourers the highest daily earnings and the employers the greatest annual profit.

But this was not understood at the time of our grandfathers ; during the hundreds of preceding generations, experience seemed to have taught the employers that if only daily wages were low enough, and the overseers did their duty with sufficient severity, the cost of production must also be low. For a long time the employers of the nineteenth century attempted to press down the cost of labour by continually reducing the piece payment, until at last an average labourer could not thereby make a fair daily wage.

The Greek deity Nemesis was supposed always to overtake crime, but she frequently came so late that the punishment fell upon the innocent. This myth contains a deep truth ; in the

evolution of society it very frequently happens that the mistakes, or egoistical wrong-doings of one generation, are not corrected or punished before the next or some still more remote generation; and thus it almost invariably comes to pass that the retribution for the faults which have been committed falls upon innocent people.

This is precisely what is happening nowadays in the relation between employers and labourers. It has at last been recognized by the most intelligent of the modern employers that they must allow their labourers to earn good daily wages, if only they can get honest work in return; but the opposition which the labourers and their unions were at one time compelled to raise against unjust and short-sighted employers who were trying to take undue advantage of the labourers, has gradually created a strong movement among the labourers for a reduction of work and a rise in payment. This tendency, which has occasionally carried the working classes into downright shirking of their duties or systematic laziness, which has been nicknamed in English "ca'canny," or to sabotage as practised on the Continent, and the like outrages, is a natural reaction against the unwise action of our grandfathers among the employers. It apparently punishes the employers of to-day, but in reality it is society at large, labourers and employers alike, who suffer under the consequences of cardinal mistakes in the past, in the matter of fixing the piece payment.

CHAPTER VIII

THE INDUSTRIALIZATION OF THE WORLD

THE "TECHNICAL IDEA" DOMINANT

INDUSTRIAL production with the use of power machinery on the English system was introduced in all countries of the North-West of Europe at about the middle of the nineteenth century. The development was at first rather slow, but since the Franco-German War the movement has gained, from decade to decade, an ever-accelerating momentum, and at the present time practically the whole of Europe, as well as North America, has been completely industrialized—in the modern meaning of this word. In this great social and political as well as economic revolution, England, the United States, and Germany have been the leaders of the world, brilliantly supported by the inventive genius of France, and also assisted by the efforts of many other countries.

Civilization has always progressed in proportion as new ideas have from time to time been created and previously existing ideas have been developed. The new and fruitful stage to which humanity has reached in the course of the last 160 years is no exception to this general law. Modern industrialism rests upon the technical idea which has prompted man constantly to search for new laws of nature, in order to place the powers of nature under his control, and to utilize more and more completely in the productive processes these powers in place of human muscular energy.

The beginning of this epoch was made in England by a number of remarkable but technically uneducated men, who invented by a stroke of genius a series of machines. Each of these inventions appeared to themselves and their contemporaries as an isolated phenomenon; and when other nations

wished to start similar industries, they knew no other way of doing so than to acquire English machines and to learn in England how to use them. It took time before it was discovered that the construction of machinery may be reduced to general mechanical laws. But during the subsequent industrial progress, new machines and new methods of production were constantly invented, and to an increasing extent the invention, or, at all events, the perfection of machinery, became a special trade of engineering firms.

In the earliest engineering works, at the beginning of the industrial epoch, machines were made for a number of quite distinct industries. Because the engineers thus had to design many different kinds of machinery they discovered empirically that several fundamental principles of construction are common for all classes of machinery. Having surmounted a particular difficulty, when dealing with one class of machinery, engineers gradually learned to make use of their experience when called upon to design other classes of machines. This particularly applies to the British engineering works at the beginning of last century; and the world is indebted to them for a great number of important improvements of the original machines, and many new technical inventions. The system which for a long time prevailed in England, of education by apprenticeship, was for its time a very good one, although it is in our days of scientific technical training customary to look upon it with much contempt.

The North Americans, living in a vast and very varied country with enormous natural resources, but sparsely populated, were placed before a special problem. The scarcity of labour made it essential to their industrial success to invent machinery and methods of production by which human labour could be saved to a much greater extent than was possible when using the first English imported machines. Their surroundings were such as to quicken their imagination. They therefore soon entered upon that phase of daring technical innovations which still so greatly characterizes the inhabitants of the United States. Nothing is more natural than that that country, which is still only at the beginning of the utilization of her enormous wealth of raw materials, should have shown to the rest of the world the way in starting industries on a vast

scale, proportionate to her enormous natural resources. In the iron trade especially, which has become at present to a much greater extent than ever before the basis of all industrial development, the Americans have been the pioneers in the art of building blast furnaces, steel works, and rolling mills of a gigantic size. It is not an accident that American machine tools at one time were considered superior to all others—and in many specialities still are the best—or that it was the Americans who first proved that it was possible to drive, for instance, paper-making machines much faster than a man can run. The standardization of industrial production is another important American contribution to technical improvement and cheapening of industrial production. They do not hesitate to spend a large additional capital on a machine when an alteration of the design makes it possible to save, if only one man, in the productive process. They “think mechanically,” as they express it; and thereby they have in many directions succeeded in so designing their machinery, and arranging their productive methods, that they have been able to undersell in some industrial branches all their competitors, in spite of the high daily wages which they are compelled to pay for labour. Altogether the Americans are “business men” in everything they undertake, and their engineers have been judged by the financial results obtained with the machines, not by their theoretical education.

For a long time the United States were among the best customers of industrial England. At about the time when the farmers of Europe began to wail over the American wheat competition, the English manufacturers also began to get alarmed at the serious competition from the States, to which they were in certain branches unexpectedly exposed. But at that time—about 1875 to 1880—not even the most farsighted could have dreamt of the possibility that Germany might in a very few years become a dangerous rival to the proud position which Great Britain still held as the chief manufacturer of the world. The fact that this has nevertheless become a stern reality in so short a time is due to the German recognition, thanks to their sound theoretical technical training, that *the technical idea* underlies the whole of the wonderful industrial modern evolution.

What is this idea? It is the belief, which entirely governs modern thought, that all natural powers can, and ought, and must be taken into the service of man, and that all industrial problems, however much they differ in every respect, may be reduced to this simple formula: how may human labour be saved? In order to find the answer to this question it is necessary to study previously known laws of nature more closely than before, and to discover new ones; to study the sciences of chemistry and of physics. By a combination of these scientific studies, and an equally scientific observation of the nature of the various industrial processes, it has been possible to conceive that we are able to harness, and thus make subservient to our will, all the powers of nature, if we only use the requisite rational mechanical means.

The original English inventions of power machinery appeared isolated and accidental. The Germans were the first who reduced the invention of new and better machines, new and better methods of production, to a scientific system, in which each improvement is followed as a matter of course by a second, a third, and an infinite number of further improvements.

In accordance with the characteristics of the English race the original inventions of machinery, which mark the beginning of the industrial epoch, were made in the empirical-inductive way. The Germans have likewise followed their national tendency when they have treated the industrial problems more after the deductive method. Both of these methods are useful and have indeed been essential to the progress of mankind; but at a certain point in the course of evolution the deductive method is the more efficient. An imaginative brain may occasionally anticipate development by an ingenious invention; but after a certain stage of industrial development has been reached, further progress follows on the application of the accumulated and systematized knowledge which is called Science.

At first the English did not fully understand the character of the competition which they began to experience from Germany. They were inclined to sneer contemptuously at the "cheap and nasty" products which were sent them from across the North Sea. But it was not long before they were

compelled to recognize that a very serious danger threatened their industrial supremacy. Conservative as they are, it took some time before they would acknowledge that they were losing ground because scientific technical education had been neglected in England. But it is also characteristic of the English, that when this mistake had been acknowledged, they set to work most energetically to remedy the shortcoming. Shortly after 1880 a number of special universities and technical institutes were established in different parts of the country, mainly founded by private donations. In each locality the particular trades of the district were given a prominent position in the curriculum of the school. Great stress has been laid upon giving these schools a broadly democratic basis, by admitting as evening scholars a large number of young people who cannot afford to attend in the daytime. There are now in Great Britain and Ireland seventeen splendidly equipped universities for teaching applied sciences, and about 300 technical and commercial schools. These universities are very thorough in respect of the scientific education which they give their students, but more practical in their organization than the German schools. They will tend greatly to strengthen England in industrial competition.

The German example of giving the youth a sound technical education has been followed during the last generation in all advanced countries, particularly in the United States, and this general scientific training of the future leaders of the industrial army is bound to exercise a very strong influence upon the industrial and commercial future of our race.

The advent of Germany in the arena of international industrial competition has therefore had an influence like a strong reagent in a chemical solution; it has set forces in motion the like of which the history of human civilization had not previously known.

Not only have the manufacturing and commercial firms of all countries been spurred on by this new competition to increased activity, but it has totally altered the attitude of mankind towards industrial problems. At the beginning of the industrial epoch, English manufacturers tried to keep their machines and methods secret. In this they simply followed the traditions of all past ages. But the tendency of

the sciences is towards full publicity, and the text-books of the technical schools give the up-to-date results, each within their special sphere, of the achievements of the whole of humanity. It is no longer possible to keep industrial secrets, even if anyone wished to do so, and it has long since been universally recognized that such secrecy is worse than useless.

Next to the technical schools, the many engineering firms are the most powerful agencies for the dissemination of technical knowledge. The technical journals, which are each year increasing in number and importance, keep the entire world, men of science as well as practical manufacturers and business men, posted with regard to every development of applied science and practical inventions in the workshops.

In such circumstances there is more rapid progress in a year than there used to be in a decade, a generation, or a century; and the sum of technical knowledge and ability, which the entire human race in common now possesses, is therefore not only enormous, but is still rapidly accumulating.

During all ages before the beginning of the modern industrial epoch, the rural population in all countries was constrained by the absence of cheap and easy means of communication to produce in the household the greater part of the manufactured commodities which they required. This was so much more the case because, before the introduction of power machinery, the manufacturing industries could nowhere be carried on with a cost of production which was so much lower than that of the household production, that this difference alone was enough to make up for the very great cost of transport over long distances. The town-made goods of the Middle Ages were not much, if at all, cheaper than the coarse home-made articles. There was, however, always a certain trade done in such goods, not because they were cheap, but on account of their superior quality and better workmanship; but this very fact kept them out of the range of the majority of the rural population, who were prevented by their poverty from purchasing to any great extent the expensive town-made articles.

The rural population, even within a very short distance from important towns, lived therefore to such an extent in

isolation, that it is almost impossible for us to form an adequate conception of the cleavage between the town and the rural populations which was the permanent condition in past ages.

The introduction of power machines in the industries did not alter at one stroke the economic organization of the entire society as much as might have been expected, because the means of communication still remained primitive. But railways, with their increased facilities for travel, and the cheapening of the cost of transport, entirely changed the condition of living in all civilized countries. They have broken down the barrier which distance previously placed to communication between the various sections of the population. There is in our time a fruitful personal intercourse, and an exchange of commodities between town and country which constantly grows in volume ; and as a result the melancholy isolation of the rural population happily belongs to the past.

In the year 1830 the railway between Liverpool and Manchester, on which George Stephenson's invention, the steam engine, was first used, was opened for public traffic. The object of the promoters of this undertaking appears to have been mainly to obtain a better method for the transport of heavy goods, and they do not seem to have had any idea of the great speed which the trains might attain. Stephenson himself calculated the speed only at fourteen miles an hour. But it was at once perceived that the new system was not only useful for the haulage of heavy goods, but that it was also particularly well suited for rapid travelling.

It took a little time before railway construction on a large scale began, and as was to be expected, England at first took the lead. The length of the railways of the world was :

By the end of 1840 :

In the United Kingdom	.	.	.	1,197 km.
The rest of Europe	.	.	.	1,534 ,,
The United States	.	.	.	4,741 ,,

or a total of 7,472 km.,

which had grown in 1850 to 34,985 km.

Since this small beginning, railway construction has extended with increasing rapidity everywhere, and the meshes of the

railway nets of nearly every country in the world have been knit smaller and smaller. The result is that at the present day it is hardly any longer possible to discover in the civilized countries a single district of any importance which has not been connected by railways with the central parts in the country itself, and with the railways of other countries. The railway system of Europe is very extensive, but the American railways are still more extensive, both in the number of kilometres and even more so in relation to the number of inhabitants. The Continent of North America is crossed by a number of trans-oceanic railway lines, and a railway crosses the Andes from Argentine to Chile. There are projects for the construction of a trunk line right along the Pacific to connect South America with North America. A railway runs from Petrograd to the Pacific across the vast expanse of Siberia; and great sections of a railway line to connect Egypt with Cape Colony have already been finished.

The length of the railways of the world has been stated thus :

	1860	1875	1885	1895	1900	1910	1912	Present estimated population, last 000 omitted
	Km.	Km.	Km.	Km.	Km.	Km.	Km.	
Europe .	51,568	142,840	195,865	252,450	285,609	333,848	342,624	459,568
Asia .	1,397	11,311	23,093	43,798	63,299	101,916	107,230	871,235
Africa .	446	2,366	7,313	13,522	21,897	36,854	42,707	136,185
America .	53,299	135,112	248,816	369,800	404,177	526,382	554,124	189,534
Australia .	346	3,738	12,986	22,371	25,026	31,014	34,803	7,760
Total .	107,056	295,367	488,073	701,941	800,008	1,030,014	1,081,488	1,664,282

The railways in 1912 had a length equal to 27 times that of the equator, and an estimate of the cost of all these railways at £10,000,000,000 is probably far too moderate.

The complete revolution of the means of communication which was a result of the extension of the railways, caused a

double change in the relations between the industrial town population and the rural population.

The easy access to the towns for the first time enabled the rural population to buy largely of the cheap manufactured goods which the industries, working with power machinery and modern methods of production, were in a position to offer them. The household industries which had previously supplied the bulk of the requirements of the country people, began to fall into decay, and in most of the advanced European countries these primitive industries had almost completely disappeared by the end of the nineteenth century. As a consequence, the demand for the products of modern industries increased so much that they were obliged to employ a larger and rapidly increasing number of labourers, in spite of the great reduction in the sum of labour which was required for the production of a given quantity of a commodity. The production of manufactured commodities was thus concentrated to an extent which had never previously been possible in the factories which were mostly situated in the towns. The productive work, which had been done in innumerable households and smithies all over the country, was replaced by factory work in the towns. The greater concentration enabled the factories to enlarge and improve their plants, and to carry out more and more completely the technical idea, which resulted in successive improvements with a constant fall in the cost of production. The cheapening of the selling price stimulated the consumption, which soon exceeded what had been customary under the old system, so much so that the sum of work done in the factories in the end became larger than the sum of household work which the factory production had replaced.

The town population began to grow in the West of Europe in proportion as the various countries were drawn into the vortex of modern industrialism. The growth of the industries, and their steadily increasing demand for labour, caused an increase in the daily wages of the industrial labourers. This rise and a contemporary improvement of the conditions of town life soon attracted labourers from the country, and thus began that migration from the country to the towns which has been one of the most characteristic phenomena of the last fifty years, and which has been so much lamented by

politicians, philanthropists, and—farmers. Whatever the economic consequences, good or bad, of this migration may otherwise have been, for the cultivation of the soil and for the development of the towns, it has achieved the liberation of the rural population from the actual bondage to which it had always previously been subjected by the insurmountable power of circumstances, which practically compelled the rustic to remain in past ages all his life at the place where he was born. It was industrialism which gave the masses of the European peoples, the agricultural classes, economic as distinct from political liberty, and thereby also the chance of taking an active part in the future development of our civilization.

The growth of the town population in the whole of Europe, but particularly in the Western countries, which has been going on during the last hundred years since the close of the Napoleonic wars, and which has been most rapid during the last fifty years, in spite of the large emigration to America and other oversea countries, has caused a much more than proportionate increase in the demand for agricultural produce of all kinds. For the standard of life of the industrial population has risen owing to their increased earnings. They have required larger quantities of food, and the rapidly increasing production of manufactured commodities which could be sold to the larger industrial and the rural population, required a larger supply of all kinds of raw materials. The increased demand for foodstuffs could at first be met by European supplies, for the railways placed large areas of land, which had not previously exported, in cheap and rapid communication with the industrial districts. But the supply soon became too small, and prices of all kinds of agricultural produce were maintained on a high level; and all kinds of raw materials, for instance mineral ores, began to advance in price. This caused land to rise in value, and stimulated the owners to bring more land under tillage, and to use improved methods of cultivation. In the whole of Europe agriculture progressed, and the wealth of the landowners increased during the nineteenth century until about 1884, at which time wheat and other agricultural produce from the American virgin prairies began to pour into European ports in constantly increasing quantities.

This competition at first looked very serious, and the frightened landowners were anxious to persuade their governments that it would spell ruin to agriculture in Europe. In many countries the governments were weak enough to listen to this interested advice, and to impose high customs duties upon breadstuffs.

The emigration from the country, first to the towns and afterwards to the United States, made labour relatively scarce in the country districts, with rising wages; and when the American competition brought about a fall in the selling prices of their product, the farmers found themselves in a very awkward situation. In America, where labour was much more scarce and much dearer than in Europe, industrial methods had already been largely introduced into the work on the farm, and highly improved agricultural implements had been invented, without which it would have been quite impossible to till and harvest the immense wheat fields, the produce of which now competed with the farmers of the Old World. These were slow to learn the lesson, but gradually they accustomed themselves to use better and labour-saving methods of agriculture, and in some countries at least American farm implements have been imported in very large numbers. Agricultural schools have been established in most of the European countries, and science has at last begun to play a very important *rôle* also in agriculture. The cultivation of the European soil has become considerably more intensive than it used to be a couple of generations ago; but it lies in the nature of agriculture that it cannot easily or rapidly be so completely rationalized as the industries, and, in particular, its management of labour still leaves much to be desired.

The railways had thus placed cheap industrial products at the disposal of the rural population, and the growth of the industrial population gave agriculture in Europe a much better market for its products than before, while the emigration from the country, which liberated the farm labourers from their actual bondage, caused the wages of farm labourers to advance. The competition from America had compelled European farmers to make a commencement of improving and industrializing their methods of cultivation.

The constant growth of the industries of Europe caused the

consumption of raw materials to outgrow altogether the supply which could be obtained in Europe. But this circumstance could not stop industrial progress; its leaders only began to look out for new sources of supply, and it was soon discovered that the other continents, much more extensive than Europe, could produce almost unlimited quantities of raw materials of every kind, provided only that their natural resources were properly developed.

One of the earliest examples of the dependence of the European industries upon the supply of raw materials from oversea countries is afforded by the English woollen industry. Originally, England had exported her large production of wool to the factories in Flanders; but at the time of Elizabeth an important woollen industry began in England itself, and during the sixteenth and seventeenth centuries the possession of home-grown wool of an excellent quality and in sufficient quantities, gave the English woollen trade a dominant position. Towards the end of the eighteenth century there was, however, great anxiety on account of the growing shortage of the raw material, due to the constant growth of the industry. In 1797 a few merino sheep were taken to Australia, which in a short time greatly improved the quality of the Australian wool, and sheep-farming in that continent was started on a large scale. In 1820 England imported 190,000 lb. of Australian wool, in 1826, 1,000,000 lb., and in 1828 the quantity was about doubled, whilst the quality steadily improved.

The intercourse between the different continents has been facilitated by the invention of steam as the motive power of vessels, which have played a similar rôle on the ocean to that of the railways in the inland communication.

The first vessel which was driven by steam was the tug-boat *Charlotte Dundas* on the Clyde in 1803, and in 1807 regular steamboat traffic was established by Fulton on the Hudson River between New York and Albany. Further progress was rather slow; it was not before 1820 that steamers were employed between Dublin and Holyhead, and it was not until 1838 that transatlantic voyages were attempted.

It took a long time before steamships won a prominent place in the ocean-going tonnage of the world; a number of important improvements had first to be made in the construc-

tion of the engines, to make it possible for steamships to compete in all trades successfully with sailing vessels. But since 1860 the percentage of steamers in the tonnage of the world has been constantly and rapidly growing, and in the period from 1875 to 1887 there was a serious crisis for sailing vessels, from the effects of which they have never fully recovered ; and since then the steamer tonnage has increased in the most remarkable way.

A large number of regular steamship lines have been organized during the last two generations, which connect every part of the world with Europe and North America. In past ages a journey to South America, the Cape, India, and the Far East, or Australia, was a very long and venturesome undertaking. But in our times people do not hesitate to visit these and other oversea countries on business or for pleasure, and their inhabitants also frequently pay visits to Europe. Since the introduction of steamer traffic on the oceans, and the opening of the Suez Canal, the establishment of the Postal Union, and the laying of a great number of submarine telegraph cables, all the continents have been brought into the most lively intercourse with each other. A journey across half the world is now easier and more convenient than it was in the days of Napoleon to travel, say, from Madrid to Petrograd, or from Christiania to the North Cape. Cablegrams do away entirely with distance ; letters pass from such places as Buenos Aires, the Cape, or India, in about three weeks, and there are few countries so remote that a letter takes more than six weeks to reach Europe.

This is indeed a most wonderful achievement of science and business enterprise in combination, to have thus, for all practical purposes, reduced the distances on our globe to a mere nothing in comparison with what they were before the invention of steam as the motive-power in ships.

The European industries would have been compelled to import raw materials from the other continents even if there had been no steamships. But the increased facilities for travel and transport greatly helped and accelerated the process, by which all the continents have become joint partners in the mighty enterprise of making the natural resources of the

entire world yield up more and more of their riches for the use of mankind.

Europe held, at the beginning of the nineteenth century, a very much more important position in the world than it does to-day. The United States were only in their infancy, the South American Republics were small communities where enterprise had gone to sleep. Cape Colony and Australia had a very small white population. India had just come under British rule, and China and Japan lived their own life almost entirely outside the rest of humanity. It was only in Europe that the sciences had been developed and had begun to mould civilization. Faulty as it was, the political organization of the European States was nevertheless far superior to the institutions of the other cultured races that ruled in different parts of the world; and many oversea countries were still inhabited by savages. It was therefore possible for the conquering States of Europe—in turn Spain and Portugal, Holland and England—to establish Empires in America, Africa, and Asia, and to carry on a sea-borne trade with all the corners of the globe.

Attention has in this book on several occasions been drawn to the fact that under primitive conditions which existed before the beginning of the modern industrial epoch, international trade was the principal source of large profits and rapid accumulation of capital. Although Spain did not get rich by her possession of the silver mines of South America, Holland and England amassed fortunes from their oversea trade; and those countries, and especially England, had thereby gained sufficient wealth to be able to take an active part in the work of opening up the material resources of all the continents, when the time came that this was a necessity for procuring sufficient additional supplies of raw materials to sustain the prodigious growth of European industries.

The assistance which was rendered to various oversea countries with the object of fostering trade, took many forms. Emigrants who had command of capital settled in the countries and started farming or other kinds of productive work; money was lent to the communities or private inhabitants, to be invested in productive undertakings, and many European Limited Liability Companies were started for

land cultivation, to carry on mining undertakings, etc. Europe did not as a rule send the capital, which in various ways was invested in oversea countries, in cash. But it exported the implements needed for the better cultivation of the land, mining machinery, iron, and many other commodities which were needed in undeveloped countries, to enter into fixed capital investments, as well as commodities for the daily consumption of the inhabitants. In this way the industries of England at an early stage found growing outlet for their products outside Europe. This export trade added considerably to the number of labourers for which the new industries could find employment. This trade therefore tended to increase still more the percentage of the population of England which depended upon industries for their livelihood. The export of British manufactures thus contributed not a little to increase the demand for agricultural produce, which caused their prices to go higher, because the supplies still came mainly from Europe. When the rest of Europe began to compete with England in the industries, the other countries also began to export a part of their produce to oversea markets, and the same tendency made itself felt in these countries, viz. a more than proportionate increase of the industrial population, with a growing demand for agricultural produce, accompanied by a rise in their prices.

In the industrialized countries of Europe the production of manufactured commodities had become concentrated in the industrial centres, owing to the superiority of their machine production. The expanding export trade in manufactured commodities to other continents had a tendency to intensify this concentration, and if nothing had checked this movement there would have happened all over the world a similar decay of the simple household industries to that which had occurred in Europe. But the cost of agricultural produce in our continent would have risen to a prohibitive height if Europe alone had satisfied the food requirements of an enormous industrial population; and the other continents would in the long run have been impoverished if they had continued to pay for their imports of increasing quantities of European industrial products only by an export of raw materials.

But in human evolution, when left to itself, there is always

compensation; and a movement which threatens to lead to injurious consequences is as a rule soon checked by counter currents.

The increasing demand for foodstuffs for the growing European industrial population, which caused the price of cereals and other agricultural produce to advance, naturally attracted the attention of the inhabitants of North America, because there were in the States vast tracts of fertile land which might yield enormous quantities of cereals if it were only possible to give them access to the sea-coast. The Americans had not hampered railway construction by subjecting it to government control or by making it a monopoly. To construct railways over the long distance to the prairies in the Far West in order to make their cultivation possible was precisely the kind of daring speculation which appealed to American ambition. As soon as it was known that there would be railway communication between the future wheat areas in the middle of the country and the Atlantic ports, a stream of energetic settlers began to move westwards to take possession of the land, and when the railway line was opened there was wheat ready to be forwarded to Europe, where it was confidently hoped that it would fetch a profitable price.

The sinews of war in this imposing struggle with nature, the capital for constructing the railway from the Atlantic to the prairies, was for the greater part supplied by England and other European countries. The vessels which were to carry the wheat from New York to Europe were nearly all owned and managed by European shipowners. The opening of this railway and ocean communication to the Far West may be compared to driving a tunnel from a lower level into a big lake. When once it has been cut through there will be a constant stream of water flowing through the tunnel. The prairies had an enormous extent, and the chance of becoming the rich owners of their own freehold farm fascinated not only the inhabitants of the States, but thousands upon thousands of farmers in the Old World as well, and as long as there was free land to be had, the number of settlers constantly grew.

In a novel called *The Pit* an American writer has vividly described the course of a wheat "corner" in Chicago. A

speculator tried to control the world price by buying all the visible supplies of wheat ; but the fancy price which he fixed drew new supplies from the most unexpected quarters, and at last a constant stream, immeasurable in its volume, came pouring in, completely crushing the unfortunate speculator. Something similar took place shortly after the prairies had been opened as the new granary of the world. Farmers had settled in hundreds of thousands on the land, and each year the crop exceeded the last one by millions of bushels. At last the prairies sent out a flow of wheat so gigantic that it grew into an elemental force like a thundering Niagara, and the weight of this immense quantity at first threatened to defeat entirely its own object, when it came ceaselessly pouring into Liverpool and other European ports. For it immediately sent the price in the markets of the Old World rushing downwards with maddening rapidity. The calculation according to which the prairies had been placed so extensively under the plough, had been based upon the high value of wheat which had been ruling in Europe before the arrivals from the States began.

We have already mentioned the well-nigh ruinous influence which this new competition at first exerted on agriculture in Europe. But on the fall of the wheat prices in London followed immediately a corresponding drop in the price which the American farmers received, and the shock was a terrible one. From the beginning of time the immense prairies had been lying fallow, feeding only a few Redskins and great herds of buffaloes. Should this glorious undertaking, the opening of this land for the benefit of a hungry humanity, end in the wholesale ruin of the thousands of sturdy farmers who had gone West to bring these fertile plains under cultivation ?

No, that must not be, least of all in the country of such a resourceful people as the citizens of the great Republic.

The problem was of a nature to spur on the Americans to the highest efforts. The big railway companies had staked their very existence upon the success of wheat-growing on the prairies. If the farmers could not obtain a living price for their produce, there would be a decline of agriculture ; and as the railways had been constructed mainly for the transport of grain and other agricultural produce, they would be ruined if this traffic fell off. The railway managers at this

serious crisis concentrated every effort on the important problem, how to cheapen the cost of transport. The railway engines were improved, the cars were enlarged, a system of grain elevators was established, not only in the producing districts, but in the seaboard ports as well. The result was a very material saving in the cost of haulage and handling of the grain until it was loaded in the export vessels. Simultaneously the cost of ocean transport was also greatly reduced, because the enormous traffic allowed of the introduction of better types of steamships, and created a stronger competition. The total freight from the prairie to the European ports was thus much reduced, leaving a relative better return to the farmers. These were at the same time not idle, but by a universal adoption of labour-saving machines for ploughing, sowing, and reaping—in short, by industrializing the work on the farm—they succeeded in reducing the cost of production so much that they were able to make a profit on a greatly reduced selling price for their produce.

In order to demonstrate more in detail how the internationalization of industrialism has developed during the last generation, it will be necessary to glance briefly at the economic development of the New World, and at the history and industrial evolution of Germany.

CHAPTER IX

THE NEW WORLD

THE first time I saw an aeroplane rising from the ground, I felt something strange pressing in my throat. It is a thing never to be forgotten to have been present at such a wonderful victory of mind over matter, at the very moment when it occurred. But what is, in my opinion, quite as remarkable as the invention itself, is the fact that the conquest of the air was instantaneously accepted by everybody as a reasonable and quite-to-be-expected consequence of the past technical achievements with which we have one and all become familiar.

This receptivity towards new ideas is quite modern. In the year 1610 Galileo Galilei published his famous book, *Nuntius siderius*, in which he recorded many important astronomical discoveries; he was accused of heresy, and was brought before the Inquisition. He had to abjure his theories, and he was sentenced to imprisonment during His Holiness the Pope's pleasure. This sentence is an example of the bigotry of the Roman Catholic Church, or rather of the theologians; and the monstrosity becomes the greater when it is remembered that it was passed about 120 years after the landing of Columbus in the West Indies, an event which ought to have resulted, one would have thought, in a broadening of men's views.

But if the great astronomer could have appealed from the Ecclesiastical Court to the public opinion of his day, there is every probability that the sentence would have been confirmed, for at the end of the Middle Ages everybody still lived in the firm belief that the earth was as "flat as a pancake," to use the words with which Holberg ridiculed the popular ignorance and stupidity. It may be doubted whether the great majority of mankind really came to understand that the earth is a globe before the middle of last century, after so many families

had found themselves with relatives and friends in the New World. This conception has, however, now so completely taken hold of us, that we find it almost impossible to realize how our ancestors, a few generations ago, could seriously have believed that the earth was flat like a pancake.

The expeditions of the great explorers in the fourteenth and fifteenth centuries, of Vasco da Gama, Columbus, Magellan, and all the others, were feats of the most heroic daring, not perhaps so much on the part of the educated leaders, but decidedly so on the part of the common sailors who followed them. For these firmly believed that if they travelled far enough they would come to the end of the world, which no doubt loomed in their imagination as an abyss in which they would fall down and be killed.

It is an almost universal mistake to believe that the discovery of the New World instantaneously changed the conditions of life in the Old World and men's views. The moderns, whose whole mode of living has been determined by their daily intercourse with the other continents, are apt to forget that the civilization of Europe, and its resources at the time of Columbus, were quite different from what we are accustomed to. Changes of view, which under modern conditions may be effected in weeks or months, frequently required, at the beginning of the modern era, generations. The number of persons of European extraction who at first settled in the oversea countries was a comparatively small one, and the means of communication between them and the population at home were few and very indifferent. Owing to these circumstances, and the preconceived and fantastic ideas of people in Europe, it must necessarily have taken a long time before more correct and reliable information about the other continents could be spread in Europe. Remember that international postal arrangements are an institution of the last two or three generations, and the newspaper press, which at present keeps us almost as well informed about our antipodes as of the happenings in our own street, did not really begin to play its important *rôle* before the close of the Napoleonic wars.

Besides these general circumstances, which for generations prevented the rapid dissemination in Europe of news from the

New World, there was a cause of a political nature which acted powerfully in the same direction. The discovery of the New World took place at a time when the mercantile system was shaping the thoughts of economic writers, and of the statesmen who were building up an absolutist organization of the various States of Europe.

The Settlements and Colonies which were founded in America and the East were looked upon exclusively as a source of wealth to the mother country. The aborigines were maltreated in the most shockingly cruel way. The inhabitants of other countries were jealously excluded from trade with the Colonies; and because the precious metals were, in the opinion of the Mercantilists, the only real wealth, the colonial policy was directed systematically to this one purpose: to be able to draw from the Colonies as much as possible of the precious metals, or goods that might be sold in foreign countries for cash. The different governments gave exclusive privileges to their own subjects, and tried to prevent other nations from trading with the Colonies, or from obtaining information about them.

In the course of not much more than one-third of a century after the discovery of America, the Spanish explorers, or conquistadores as they styled themselves, had found their way to nearly every part of South America. They had not only taken possession of the whole of the coast-line, but they had also traversed the continent in different directions; and it is only in the course of last century that our knowledge of the geography of South America has been greatly extended beyond their discoveries. The daring, courage, and skill of these conquistadores, who were followed as a rule by only a handful of men, will for ever deserve a high place among the records of heroic deeds.

They founded cities and settlements in Mexico, and all along the west coast; the fine cathedrals which embellish these cities is evidence of the mighty organization of the Roman Catholic Church. But the bravery of the conquistadores was not greater than the cruelty and treachery which they used towards the Indians; and the Church is responsible for having recommended the importation to America of negro slaves from Africa.

The Spaniards went to America in search of precious metals and diamonds. Their zeal for explorations ebbed out when no more of these could be found. Under the withering sway of the Hapsburg dynasty, the different Spanish-American colonies languished. The Spanish Crown wanted silver; it did not understand that the rich soil of Southern America, if properly cultivated, might have produced wealth far beyond the output of the richest silver mines. Thus for centuries the vast resources of these countries remained practically dormant. The rapid development of Argentina during the last fifty years shows how much the Spaniards lost by their mistaken policy. It was not before the Colonies had won their independence, at the beginning of the nineteenth century, that Latin America began to develop her resources, and it was really only in the second half of the century that this movement gathered impetus.

For a long time after its discovery South America therefore played only a comparatively unimportant *rôle* in the trade of the world, except that the silver which Spain obtained from that source supplied the Hapsburgs with the wherewithal to oppress Europe. This great influx of silver did not permanently benefit Spain; it helped, however, Europe to make the transition from *Naturalwirtschaft*, as the Germans call it, to the modern, capitalistic system of social economy.

The history of the North American Continent has been totally different from that of South America. No great finds of minerals were made at first in the districts which border upon the Atlantic, particularly not of precious metals.

The Norwegian vikings had by accident found their way to the North American Continent, but this knowledge did not lead to any permanent settlements, and in the course of time it was quite forgotten. The first to find their way to Newfoundland and Labrador were the Italian sailors, Giovanni Caboto and his son Sebastiano, who made a voyage in the service of Henry VII of England, and landed on Labrador in 1497. The Spanish conquistadores went in quest of silver to the El Dorado. Columbus himself died in the belief that he had reached a spot within a short distance of East India, and in a similar way Cabot believed that he could reach the fabulous

city Catai in India by the North-Western passage. In the one case as in the other, it was greed which prompted the voyages ; and in the spirit of the age they considered the precious metals as the only true wealth. On his second voyage Sebastian had to desist from his purpose of finding the North-Western passage, frightened by the severity of the climate, but he sailed along the coast and reached Southern Maryland in 1518.

Fernando Cortes, with not more than 600 or 700 men, in the course of two years, from 1518 to 1520, conquered the great empire of the Azteks in Mexico, which therefore came under Spanish sway. In 1512 the Spaniard Juan Poree discovered the peninsula of Florida, which remained a Spanish colony, and together with Louisiana around the Mississippi was ceded to England by the peace of 1763.

The baneful Spanish influence upon the fate of North America was confined to these three countries, Mexico, Louisiana, and Florida, and was only of short duration ; if it had been otherwise, the course of its development would have been a very different one.

The French were the first to make use of Cabot's discoveries in North America ; the Colony of Canada was founded in 1536, and only seven years after the voyage of Cabot, fishermen from Brittany and Normandy fished on the banks off Newfoundland.

During the eighteenth century England and France were continually fighting for supremacy in the world. Their conflict was extended across the Atlantic, and in 1763 the last of the French Colonies in North America passed into the possession of England.

Meanwhile a continuous chain of English Colonies had been established along the littoral of the Atlantic, from Arcadia in the North to Florida in the South. The majority of them were founded by Royal Letters Patent ; but the settlers were for the most part men who were dissatisfied with political and religious conditions in the old country, and who, being Englishmen, were accustomed to self-government.

At the time of the great Migration of the Nations, when Gothic and Germanic barbarians swept over the Roman Empire, they found themselves as conquerors in thickly populated countries which they subjugated. The final outcome of the

assimilation process, which lasted through many centuries, was the feudal system of land tenure which was established in nearly the whole of Europe, and which still prevails in many countries. The majority of the inhabitants of our continent were thereby in so far disinherited that they could not become owners of the land. The rural population were tenants, more or less subject to bond-service, under the aristocracy, and the majority of the town population were artisans who were fettered by guild regulations which were sometimes very irksome. Personal freedom, as we now experience it, hardly existed in Europe at the time when America was discovered.

It had never before happened in human history, that men who were in possession of such vast stores of knowledge and technical ability as had accumulated during many centuries in spite of all drawbacks in Western Europe, suddenly found themselves in a country of enormous extent, unoccupied except by hunting tribes, and where each newcomer could therefore take possession of as much land as he might wish.

At the present time the United States excel, among other things, by their great production of all kinds of minerals, including gold and silver ; but it took a long time before this mineral wealth was discovered. The first settlers were therefore constrained to devote their attention mainly to the cultivation of the land, for which the climate was suitable, being warm but not tropical. No important discoveries of the precious metals having been made, it was not profitable for the English Government to maintain such strong settlements in North America as the Spaniards in South America. They contented themselves, in the spirit of those days, by imposing upon the North American Colonies the obligation to buy manufactured articles from England, but otherwise they allowed them to manage their local affairs in their own manner.

A ruthless war of extermination was waged by the white settlers against the redskins. In the Southern States, thanks to a constant importation of slaves from Africa, the cotton and tobacco industries soon flourished.

An impartial study of the history of the acquisition of the New World by the white race does not justify a high estimate of the morality of the European civilization of the epoch. To Americans, the thorny Negro question—of which no settlement

is in view—is a permanent reminder of the sins committed by their ancestors against the black race.

Apart from these dark spots which stain the beginnings of the evolution of the North American Commonwealth, the peculiar conditions under which the white settlers found themselves, of which self-government and abundance of land are the most prominent, have created an entirely new form of European civilization of which the most characteristic trait is the self-reliance of the individual. The victory of the whites over the redskins was, after all, a comparatively easy matter. What has shaped the North American nation has mainly been that terrific struggle in which they have succeeded, in less than 150 years, in conquering the nature that surrounded them, a struggle which has resulted in making the vast continent of which they had taken possession yield up its rich resources at their bidding.

What the North Americans have had to fight has in reality been the immensity of their country. A few figures will show what is meant by this expression. The United States declared their independence on July 4, 1776. According to Mulhall their population has grown thus :

THE POPULATION OF THE UNITED STATES
(THOUSANDS OMITTED)

Year	New England	Middle	Southern	Western	Pacific	Total
1790	. 1,010	1,342	1,580	—	—	3,932
1800	. 1,233	1,807	2,214	54	—	5,308
1810	. 1,472	2,479	2,997	292	—	7,240
1820	. 1,659	3,194	3,932	849	—	9,634
1830	. 1,954	4,138	5,164	1,610	—	12,866
1840	. 2,236	5,088	6,367	3,378	—	17,069
1850	. 2,724	6,593	8,288	5,409	178	23,192
1860	. 3,145	8,294	10,297	9,222	485	31,443
1870	. 3,506	9,770	11,330	13,188	764	38,558
1880	. 4,010	12,375	15,254	17,509	1,262	50,410

With the exception of Kentucky, the thirteen colonies which originally formed the United States of America were all situated on the narrow fringe of the continent between the Atlantic

and the Alleghany Mountains, which were a formidable barrier to the expansion of the people at a time when there were as yet no railways.

The citizens of the new State had not yet accumulated much capital at the period of the rupture with England, and their manufactures were still in their infancy, because they had been in the habit of importing manufactured goods from the mother country. But they had an unbounded faith in the resources of their country and in themselves, and nowhere has the energetic individual, who was willing to do hard work, had better chances. The fact that capital was spent in a virgin land caused it to yield enormous profits. Wages were high because every labourer, dissatisfied with the wages he obtained, could procure land for the asking. The majority of the original settlers being of Anglo-Saxon descent, they had brought with them that genius for making inventions which is, as I have previously remarked, a typical characteristic of the English race. That being so, there is small cause for wonder that the inventions which had been made in England at about the same time as the United States were founded, were soon transplanted to America. Besides, the scarcity and dearness of labour compelled the Americans to make many modifications and improvements upon the original English inventions.

There was, in particular, one invention which appealed to the American mind with quite an exceptional force, viz. the railway, because, circumstanced as they were, nothing was of more paramount importance than to find means of bridging over the enormous distances in their country. Their expansive energy had prompted them to go in constantly increasing numbers to the "Wild West," even at the time when the long journey had to be made in heavy wagons drawn by bullocks; but to cover such a vast country this mode of journeying was far too slow for the impatient American. He grasped at the railway with both hands as soon as he had heard about it.

In 1840, only a decade after the opening of the Manchester-Liverpool railway, there were in the United States 3,319 miles of railways open for traffic, while there were at the same time only 838 miles in Stephenson's own country, and not more than 1,912 miles in the whole of Europe. Since then the

United States have kept pace with Europe in railway construction. The mileage of the railways open for traffic was :

	1840	1860	1882
In Europe .	1,912	32,256	109,393
United States .	3,319	30,593	104,810

Not only have Americans made many improvements in the construction of railway engines and rolling stock, as well as in the construction of the permanent way, but it is principally in the financial organization of the railways that they have introduced novelties of the utmost importance. In Europe, with the exception of England, the railways have been constructed almost entirely on behalf of the governments. In the United States, on the other hand, it has been left to private enterprise to supply this splendid means of communication. In a number of cases, the Government has not only assisted private companies, undertaking to provide new districts with railways, by giving them a free grant of a wide belt of land on both sides of the proposed railway line, but has placed no restrictions upon private enterprise in this field, trusting to the beneficent influence of competition to protect the public. It is under this enlightened policy that the United States have obtained a railway service which is in many respects far superior to that of any other country.

While the general rule in Europe is to construct railways by preference in those districts which have already a fairly dense population, so that a reasonable dividend may be expected, the railways in America have been the pioneers which have been followed by a constantly growing population. This system would not have been accompanied by such good results had it not created a special type of organizers, unknown elsewhere—the much-abused American railway magnates. These men who calculated on the increasing value of the land, have played a *rôle* in the economic evolution not only of their own country, but of the whole world, which may well be compared with that of Napoleon. It is mainly due to their daring initiative that the immense productive resources of the United States have been opened up in such a marvellously short time.

It is not only in railway construction, and the technical and

financial handling of all railway problems, that the peculiar economic conditions of the United States have created a new type of captains of industry. In all branches of industry and finance the very atmosphere of America seems to have called forth talents of daring management to which the Old World has had no parallel. The typical American business man is not frightened when confronted by a gigantic and difficult problem. On the contrary, the mere size of an enterprise seems to stimulate his fancy, and to appeal to his imagination, so that he frequently discovers the most surprising solutions of the difficulties involved. People generally make the mistake of thinking of the United States as a country somewhat of the size of the European States, while it is a vast continent. There is no country in the world which contains so much natural wealth and such varied resources: fertile land of enormous extent, and vast forests; the richest deposits of coal, iron ore, copper, and other minerals; and a great variety of climates. When the original settlers began to draw from these sources of wealth they were quite unfettered by the traditions and usages which in so many ways hampered the activity of the citizens of the Old World. They were met by conditions which were frequently quite new and untried. This gave them a freshness of view and a keenness of conception the like of which had never previously been experienced. The result was that they discovered many new methods of production and distribution.

Curiously enough, the United States have never been very happy in the handling of the finances of the Government, or the organization of their banking institutions; and an incidental consequence of the application of unsound principles in the financial management of the Government has been the adoption of a Protectionist policy very soon after the foundation of the United States.

Not because of, but rather in spite of Protection, which has been continued to this day, the manufacturing industries have grown with increasing rapidity. The terrible war of secession from 1861 to 1865 temporarily checked this growth, but nothing could permanently prevent the people of the United States from advancing on the road of immeasurable material prosperity.

In the eighties the effects of the opening up of the prairies by railways startled Europe; an ever-increasing quantity of wheat began to pour into the ports of the Old World, and this competition seemed to spell ruin to the corn-growers of Europe. An equally large supply of hog products, meat, and other farm products followed, and in nearly all European countries the agricultural classes began to clamour for protection against this ruinous competition, as they styled it. And in some countries, notably Germany, the landed interests succeeded. Their demands were granted, and the consumers were "protected" against cheap food.

So rapidly, however, does the economic evolution of the United States proceed, that we have come at the present time—in the year 1917—to the point that the time may already be calculated with some degree of certainty when the United States will require for consumption within their own borders the bulk of the immense quantities of foodstuffs which they are able to raise. They import already frozen meat and maize from the River Plate and Brazil, they do not export such great quantities of hog products as before, and even of wheat the natural export is practically stationary.

The other day I received from The City National Bank of New York statistics of the meat production in the United States. Between January 1, 1907, and January 1, 1917, the number of cattle had declined from 51,566,000 to 40,849,000, and the number of sheep had gone down by five millions. The number of pigs had, however, in the same time increased by 13,000,000. In this period of ten years the population had increased by eighteen per cent.

As a consequence, the quantity of meat available for export has been greatly reduced. The export of fresh meat fell from 281,652,000 lb. in the fiscal year 1907 to 6,394,000 lb. in 1914, just before the outbreak of the war; and the number of cattle which were exported fell from 584,239 in 1907 to 21,666 in 1914; but the export price rose from about \$70 to \$110. Other meat products likewise show decidedly declining export figures: bacon from 361,000,000 lb. in 1907 to 194,000,000 lb. in 1914, lard from 741,000,000 lb. to 143,000,000; and, in spite of the great advance of the prices, the aggregate value of the export of all kinds of meat and dairy produce

declined from \$210,000,000 in 1907 to \$143,000,000 in 1914. Owing to the enormous rise in values after the beginning of the war, the value of this export rose, however, in the fiscal year 1915 to \$220,000,000, and in 1916, \$291,000,000.

Horses and mules have in the period 1907—1917 grown in numbers, notwithstanding the extensive use of automobiles, horses from 19,747,000 in 1907 to 21,126,000 in 1917, and mules from 3,817,000 to 4,639,000.

This change has come about as the result of an expansion within the last generation of the manufacturing industries, which is for its magnitude and diversity without parallel in the history of any other country. Between them, agriculture and the industries have been able to employ the enormous and constantly growing increment of population which has taken place since 1880.

The population of the United States has grown thus :

1790	3,929,214	1910	91,772,266
1830	12,866,020	1911	94,108,687
1860	31,443,321	1913	97,028,497
1880	50,410,000	1914	99,109,675
1900	75,994,575	1915	100,730,000

The immigration has been :

Before 1820 probably 250,000

1851—1860	2,600,000	Average per annum	260,000
1861—1870	2,310,000	” ” ”	231,000
1871—1880	2,810,000	” ” ”	281,000
1881—1890	5,250,000	” ” ”	525,000
1891—1900	3,840,000	” ” ”	384,000
1901—1910	8,790,000	” ” ”	879,000
1911 . . . . .	. . . . .	” ” ”	878,587

From 1821—1911, 28,950,000.

The chief characteristic of this industrial evolution has been its rationalistic trend. The American is not a sentimentalist in business ; he has no compunction if he ruins his competitors, and the industrial activity is increased or restricted exclusively according to the state of the market, without any consideration of the distress which a temporary reaction may have upon the working classes.

But this apparently egoistical direction of the economic activity of the country which asks only one question: does it pay? results in giving the productive forces of the entire nation a terrific momentum. In a bureaucratic society of the German type, national concentration upon wealth creation may be initiated and directed by the Government. In a self-governing nation like the American, imbued with an extravagant sense of the rights of the individual, everyone is working with all his might to make his fortune, and willingly places himself under the leadership of the man who has success and nothing else for his credentials. In no country is there a stricter discipline in the industrial army than in the United States, the land of liberty, and in no country has the struggle of life produced so many brilliant business administrators, who have deserved, by their astonishing ability, the obedience they receive.

It would be impossible to give a comprehensive list of the principal of the innumerable new industrial inventions, or improvements of old methods, which have been made in the United States. Let me give, as an indication only of the variety of these improvements, a few examples. The Americans were the first to introduce the gigantic plant in the iron industry—enormous blast furnaces, and open hearth furnaces. They were not frightened because nobody else had previously tried to operate on such a big scale. The result proved their calculations to have been quite correct, and the Germans, who followed their example, have afterwards enlarged the plants still more.

A similar tendency has been noticeable in the endeavours of American engineers to increase the speed of the machines which they constructed; a typical instance is the fast-running big paper-making machine.

Earlier than in other countries, the Americans began to standardize their production. A conscious striving for perfection in the mechanical execution and finish of their products is so typical of Americans, that one can as a rule without any special knowledge pick out by its workmanship an American article.

Whatever their occupation may be, whether they are farmers or manufacturers, the Americans have always this point in

view: how can we save part of the labour? Wages being high, there is a great gain per annum for each man's labour which may be saved, and to obtain this gain it is therefore profitable to spend more capital on improved machinery than would be the case if wages were low. It may be hard on the particular man who may be thrown out of his good job because a machine is constructed which does the work without him. But it is owing to the unceasing introduction of better and better methods of production, resulting in a constant cheapening of the cost, that the products of the American industries have found a steadily increasing market, and they can therefore each year employ a greater army of labourers.

Rural England is not so thickly populated nor so well cultivated as it might have been if her wicked and irrational land laws had not made it so difficult for the poorer classes to acquire land. At no period of her history has this bad land system done greater harm to the working classes directly, and her economic structure generally, than at the period when labour-saving machinery was introduced. For at that time this saving of labour actually resulted, more than to-day, in loss of employment for a part of the working classes. Those workers who were thus thrown out of employment could not find employment on the land, and the transition period was accompanied by a depression of daily wages, and a corresponding lowering of the standard of life of the English working classes. There has since then been, as I have tried to explain, a steady but rather slow improvement, but this affected mainly that section of the working class who are classified as skilled labourers, and upon the whole the condition in England of unskilled labour, particularly of farm labour, is still very far from satisfactory. The relatively low wages which were current in England explain to a large extent why the industries remained, during a part of the second half of the nineteenth century, comparatively stationary.

In the United States conditions were entirely different. To open up the vast continent, to bring under cultivation the enormous prairies, to construct such a mileage of new railways each year, to utilize the rich mineral deposits, to start manufactures of every kind on a gigantic scale, it was necessary to employ every willing pair of hands that could be procured.

For a long time the working classes in America, whether natives or immigrants, had the option of taking land under the Homestead Act if they did not get what they considered adequate wages.

It was this possession of abundance of land, and the easy access to it, which secured to the American people, during the whole of last century, the inestimable blessing of a high standard of life. Wages had to be adjusted accordingly.

The land is now, however, being rapidly taken up, and it is at the present time perhaps not very much easier to start without capital as a farmer in the States than in Europe, and during the last thirty years a greater proportion of the enormously increased immigration has gone direct to the industrial centres, and not as previously, mainly to the wheat land.

It might have been expected that the great change which has thus taken place in the economic structure of the country would have been accompanied by a tendency towards a fall of wages, particularly as there has also been a very material alteration in the ethnic composition of the immigration. A general tendency in this direction is as yet, however, hardly noticeable. The high standard of life is so ingrained in the American sentiment that it probably acts as a deterrent upon employers as a class, even if some of them might be inclined to try to get their work done at less than standard wages.

More important than this sentiment as a protection for the working classes against a fall of daily wages is the high rate of capitalization which prevails in the American industries. As a result of the conditions under which the industries have been evolved, the average rate of capitalization in America is undoubtedly much higher than in any other country. But if this is so, it follows that nowhere is it of more paramount importance to the employers to obtain efficient labour. It is in estimating the chances of obtaining labour of high quality that his sentiment of the justice of a high standard of life greatly assists the American employer in shaping his policy towards his labourers. He does not as a rule try to reduce the daily wages, which he would think mean; but he insists upon getting a good day's work as an equivalent for the high pay he gives. The Socialist movement is a great and disturbing factor in the

American as well as in the European labour world, as the Socialists in America, like their brethren in the Old World, try to induce their members to believe that it is to their interest to do as little work in a day as possible.

Up to the present the American industries have not suffered very much from the sabotage tendencies of the trade unions. For when upwards of one million immigrants are landed in the ports of the United States every year, each "boss" in a workshop knows, and all the labourers who are employed there also know, that he may at any moment "sack" a man who shirks his duty, for there are ten men outside the gate who are only too anxious to get the job.

The evolution of the American nation has tended to give it a hypernervous temperament which finds its natural vent in rapid and energetic exertions, and the working speed in the American industries is therefore much higher than the average in Europe. Newcomers soon learn, because they must learn it, to keep pace with their fellows in the shop.

Thus the American industries obtain efficient labour while the working classes can keep up their high standard of life, because they earn high daily or weekly wages.

I am rather doubtful whether the Americans will be able to keep up permanently the tremendous speed which is at present typical of them; they work as if they lived in a temperate or even a cold climate, while New York lies on the latitude of Madrid. There are not wanting signs that the physical strain is too great, but the effects of over-exertion have not yet been very noticeable, simply because the nation has been constantly reinvigorated by the new blood received from abroad. The time will finally come when wages in the United States and in the Old World become equalized, either by a sinking of the American or a raising of the level in Europe; and when this happens, and when cheap land is not any longer to be had in the States, the flood of immigration will gradually subside, and Americans must in the future rely on their own national physical and moral strength.

CHAPTER X

GERMANY

IF one may judge from what is known through the Icelandic sagas of the ancient Norwegians, the ancient idea of the State must originally have been quite foreign to the Germanic peoples, who knew only the folk or *fylke*, that is to say the tribe, consisting of the owners of allodial land in a comparatively small neighbourhood. These were all freemen and equals; but in public matters they followed the leadership of the most high-born and wealthy families. The free yeomen were, however, in the habit of entering into the personal service of warrior kings, such, for instance, as those who led the vikings in their raids. When Germanic kingdoms had been established in various countries, the yeomen only followed a long established practice, and did not lose caste by entering into the service of the King as his hird or bodyguard. Such service conferred, on the contrary, rank and honour. The members of the Royal Suite considered themselves bound by very strong ties of fidelity towards the man who had become by their own free choice their chieftain. Out of this personal relationship between the kings and their entourage grew the feudal system, which developed during the Middle Ages in such a manner that it became a terrible curse to all the nations of Western Europe.

The different tribes of Germanic descent who founded states on the ruins of the Roman Empire, had, at the time of the conquest of the respective countries, no institutions suitable for the government of large states, no common laws and no proper machinery for the administration of justice. Everything depended upon the personality of the conquering chieftain, who appointed his own servants to act on his behalf, and to see that his commands were obeyed in the different parts of his

country. Under the very primitive economic conditions which prevailed at the beginning of the Middle Ages, the income of the State was small, and the King had not much money to compensate and reward his men for their services ; so he granted them some part of the land of the Crown which had been confiscated by the conquerors from the previous owners. By accepting this grant the King's servants became also his vassals. The land at the disposal of the King being plentiful, he could give those of his followers whom he particularly favoured big feoffs or feuds. The vassal with his men was bound to follow his liege lord in time of war, and do his bidding in peace, and the bigger his feoff the greater was the assistance which he could render. But when a Duke or a Count had received the grant of the Crown lands in a large district he could not personally use it all, and to obtain a revenue therefrom he sub-granted portions of it to men who entered his service in the same way as he had become the servant of the King. These men became vassals of the vassal.

Finally the entire society of the Middle Ages became completely honeycombed by feudalism. Kingship when first met with among the Germanic people was purely a personal and not a hereditary matter. The idea of land as an object of inheritance was, on the other hand, deeply engrained in their consciousness. During the centuries when modern civilization was in the throes of shaping, and all divine and human laws of right and equity were lost and forgotten, when might was right, and humanity suffered as it has seldom suffered, before or after, the authority of the State represented by the King was by degrees almost effaced. By a curious reversion, in this universal calamity, to the primitive instincts of the hereditary character of land, the feudal vassals gradually won from the weakened Crown the inheritance of those feoffs, which had been originally granted them for personal services to be rendered to the King. Ultimately the feoffs became hereditary, in the female as well as in the male line of descent—a very important point to be remembered.

Not only did the vassals, who thus became a landed aristocracy, thereby diminish the inheritance of the Crown and the political power of the State, but in the time of the Club-law which prevailed everywhere and in everything, the same aris-

toeracy thoroughly enslaved the majority of the nation, who, when not their vassals, became their villains or serfs. Nominally the head of the State, the King had no other effective means of exacting obedience from rebellious vassals than to make war on them—if the resources of his allodial estates were sufficient for this purpose. At the period when the feudal system had been fully developed in Western Europe, the free yeomen had almost completely disappeared. The common people had no protection against the rapacity and the terrible ill-usage to which they were subjected by a haughty, brutal, and incredibly ignorant landed aristocracy.

The Franks, a branch of the great Germanic family of folks or tribes, took possession of Northern Gallia and the adjacent parts of the present Germany. These invaders, who are described as exceptionally ferocious, must have been few in numbers in comparison with the Romano-Celtic population which they subjugated. Under the influence of their surroundings they soon developed to a higher plane of civilization than the kindred peoples who had remained beyond the Rhine. Under the Merovingians and the Carolingians they extended their sway over the whole of the present France, including Burgundy, and also over some of the tribes who lived in the present Germany. And the Empire of Charlemagne finally extended from the Pyrenees to the Oder and the Donau, and at Christmas 800 he was crowned Roman Emperor by the Pope in Rome.

The Franks amalgamated in a comparatively short time with the other Germanic tribes who had settled in France, and with the Gallo-Roman population, and a new mixed nationality early began to develop in their country. In Germany the different tribes or nations had had relatively fixed abodes for centuries before they became united under the sceptre of Charlemagne. They differed considerably from one another in customs and dialects, and each of these tribes had its own high-born and powerful aristocracy; the chieftain was called *Hertug*, who had a position parallel to that of the old Norse *Herse*. Charlemagne made use of their influence and took them into his service, making them his great vassals. It was only when they rebelled that he removed them from their position as members of the Imperial organization which he

attempted to create. This arrangement tended, after the strong hand of Charlemagne had disappeared, to perpetuate the separate individualities of the different tribes, because they considered their local *Hertug*, and not the weak Emperor, as their real chieftain. Although the various German tribes differed much less than the various component parts of the nation which was forming in France, they did not become amalgamated because they were not subjected to a similar unifying process.

The Carolingians followed the example of the Merovingians ; looking upon their country as a patrimony they divided it, as if it had been private property, among their sons, and the mighty Empire of Charlemagne therefore soon fell to pieces. By the Treaty of Verdun of 843 his grandsons divided the Empire between them thus : Lothar, who had become Roman Emperor, received as his share Italy, and in addition the narrow strip of Gallia which lies between the Rhine and Rhone, the Scheldt and the Meuse ; Karl the Baldheaded obtained those countries which lay to the west of Lothar's part ; and Ludvig the countries east of the Rhine and the Reus, with the exception of the land of the Frisians which was added to the part of Lothar.

This arbitrary division did not give what in modern parlance would be called scientific frontiers. The Emperor Lothar abdicated in 855, and, against his solemn promise to his father, he also divided his dominions, giving Ludvig II Italy, and his other son, Lothar II, Austrasia on the left side of the Rhine, and the provinces by the Rhone : Wallis, Genève, Lyonnais, Dauphiné, Provence, Franche-Comté, Vaud, and Savoy. It is this Lothar who has given his name to Lothringen (Lorraine).

This narrow strip of land which stretched from the Mediterranean to the North Sea, between France and Germany, embraced some of the most fertile and valuable districts of Europe. The inhabitants had for the greater part been Romanized, and on ethnological considerations these districts ought to have formed a part of the Romanized France, whereby the Rhine would have become a natural boundary between that country and Germany. *But by a whim of three turbulent*

brothers this undefined strip of land was given, more than a thousand years ago, a semi-independent existence. The causes of the Great War may be, at least partially, sought in the consequences of this Treaty of Verdun.



THE PARTITION OF THE EMPIRE OF CHARLEMAGNE BY THE TREATY OF VERDUN, 843.

During the subsequent feudal evolution the countries with which we are here dealing were split up into a number of small feudal estates: the short-lived Kingdom of Arlate, the Dukedoms of Burgundy, Lorraine, Luxemburg, Brabant, Flanders, and several others. These were sometimes independent, some of them were sometimes subject to the German Empire;

sometimes they were separated, at other times some or most of them were united under the same ruler, and some parts were finally incorporated in the Kingdom of France.

In 1363 Johan, King of France, granted Burgundy as a feoff to his fourth son, Philip the Audacious, whose family subsequently acquired by marriage, purchase, or conquest, nearly all those principalities which were afterwards known as the Low Countries. His house, which had in the meantime practically obtained independence and sovereign power, was extinguished on the death of Karl "Le Téméraire" in the Battle of Nancy, 1477. The feoffs of Burgundy and Picardy were declared to be forfeited, and reverted to the French Crown, but the other dominions of Karl were inherited by his only child, Marie, who married Maximilian of Austria. Personal accident thus played, a second time, a fateful rôle in the destiny of these rich countries, which formed for a long time the most valuable jewel in the family possessions of the House of Habsburg, which they had, however, frequently to defend against the Kings of France.

In Germany none of the tribes had been powerful enough to subjugate the other tribes, as the Franks did in Gallia. The fact that the German nation was not in infancy welded into a political and ethnical unit in a strong State, as was the case with the other Western nations, has been a determining factor in its subsequent historical evolution.

Charlemagne tried to curb the power and influence of the ancient leading chieftains, notably the Dukes of Frankia, Saxony, Thuringia, Bavaria, and Swabia. But his successors were weak and divided, and when the German male line of the Carolingians was extinguished, on the death of Ludvig Barn in 911, the German Dukes had all but regained their independence. Nobody could have prevented them from declaring themselves sovereigns. Feeling the necessity of holding together, however, they elected Konrad of Franken to be King of Germany. On his death in 919, Henry the Fowler, Duke of Saxony, was elected King, and on his death in 936 he was followed by his son Otto.

The Crown of Germany remained elective, although as a rule the successor was taken from the same family as the

late King. The great feoffs, on the other hand, gradually became hereditary. This serious constitutional weakness would probably in itself have been enough to prevent the German monarchy from developing sufficient strength to check the growing power and independence of the feudal aristocracy, represented by the great ancient Dukedoms. In addition to this inherent weakness of the German monarchy, the great misfortune happened to the German nation that the Roman Imperial Crown became from the time of Otto, surnamed the Great, united with the Royal Crown of Germany, and therefrom developed what eventually came to be known in history as

“DAS HEILIGE RÖMISCHE REICH DEUTSCHER NATION.”

Under Otto the Great Germany was for a short time the leading State in Europe. He kept the vassals in subjection and fought the Slavs. He also obtained considerable influence in Italy, where he was crowned as Emperor in 951. But this splendour was only transient, and his successors who vainly tried to gain real power in Italy missed thereby the opportunity which they might otherwise have had, of consolidating the monarchical institutions of Germany.

The disintegration of the State and the diminution of the authority of the King that resulted from the growth of the feudal system, proceeded nowhere more rapidly or more completely than in Italy. In that country the spiritual and political influence of the Pope developed at the same time into a constantly more important factor. And in Italy, earlier than in other European countries, the commercial cities began to grow in wealth, civilization, and political importance.

The Salic-Frankish House which reigned in Germany from 1024 to 1125, wasted their own strength and the strength of Germany in a vain attempt to combat the growing ascendancy of the Pope. The idea of the supremacy of the Spiritual Power was one which appealed so strongly to the mediæval mind, that the vigorous and proud Henry IV was compelled to humble himself, and go in 1077 as a penitent to Canossa in order to be absolved by the masterful Pope Gregory VII from the excommunication which had been proclaimed against him. The strife was renewed by his successors, but the opposition of this house to the Pope ended in the most complete failure.

In 1138 the Royal German Crown went to a new house, the Staufers, who retained it to 1254. Their most brilliant representative, and one of the most remarkable figures in the history of the Middle Ages, was Frederick, surnamed Barbarossa, hated by the Italians, but reckoned by the Germans as one of their prominent Princes. He was elected King in 1152.

By his time the cities of Italy had already reached such a position of wealth and political power that to subdue them proved an impossible task. When Frederick tried to deprive the cities of the rights and privileges which they had acquired, they combined with the Pope to oppose him. And the fate of the Staufers in their prolonged struggle with the Italian cities was not less tragic than that of their predecessors who attempted to fight the Pope. The cities which represented the idea of liberty won a complete victory, and the Stauffer family was entirely annihilated.

Thereupon followed what is known in German history as the Great Interregnum from 1254 to 1273, during which time none of the Emperors was universally acknowledged, and nobody had the power to unite Germany. Even the great Dukedoms were at this period subject to a disintegration similar to that of the Empire itself. The mighty Empire of Otto the Great was split up into a great number of virtually independent small states, and no one would any longer be the vassal of anyone but the Emperor. It was at that time that Germany became divided into an enormous number of petty states, principalities, and *reichsunmittelbare* cities and princelings. The exact number has not been fixed, but at one time there were more than 350 separate sovereignties. Under such circumstances the German nation could not become united and develop properly, lacking as it did the unifying tie of an all-embracing State authority.

The feudal system at one time threatened to put a full stop to progressive civilization in Europe, for it was directly opposed in the idea of national government. At the period when the power of feudalism was at its zenith, the King's writs were not effective within the domains of his vassals who had usurped the right of jurisdiction, each within his own feoff. Modern democracy is based upon the idea of the equality of all citizens

before the law. To satisfy this demand, the law must be the same in all parts of the country, and administration and jurisdiction must be carried on under one common and universally accepted authority. From this necessity springs the modern democratic conception of national government, which is diametrically opposed to the ancient idea of the aristocratic City State, and perfectly incompatible with the anarchical feudal negation of the supremacy of the State.

The tendency of feudalism was to split up Europe into as many isolated units as there were knightly castles. If this system could have prevailed during a longer period than it actually did, progress would have become well nigh impossible, because these innumerable small, independent and semi-independent political divisions would have become petrified and immovable.

It was the historical mission of the monarchies in the different national states, which were slowly evolved out of the chaos of the early Middle Ages, to break up the feudal system and to destroy, more or less completely, its power of doing mischief.

The process by which this change was accomplished began at different times in the various national states from the eleventh century onwards, and in the end the monarchy as a result of this struggle in most of the Western States of Europe became absolute. Most countries still retain, however, plenty of evidence of the fact that they have, centuries ago, passed through the feudal ordeal, but this is now shown more in their social structure than in the political organization. In those states where there is still a powerful aristocracy there will yet be many a fight before the dominant modern political idea of democracy has gained a complete victory.

In most countries the belligerent King had long ago secured the recognition of the supremacy of the State. In Germany historic evolution, and particularly the connexion with Italy, deprived the weakened monarchy of the opportunity and the power of crushing the feudal system with its disintegrating tendencies.

The Napoleonic wars swept away to a great extent the cobweb of diminutive principalities which had overgrown the body politic of Germany, and subsequent events have still more reduced the number of petty states. In spite of this the German Empire is still made up of not less than twenty-six

separate and sovereign states, petty principalities, and free towns, and the German nation still suffers from nearly all the evil consequences of feudalism and a privileged nobility, forming an exclusive military caste. The Germans have still to learn the significance of the godly words: liberty and self-government.

The result has been that while France, England, the Scandinavian countries, and also Spain and Portugal, can all look back upon a really national history of eight or nine hundred years' duration, it was not before the beginning of the nineteenth century that the feeling of national unity became an active force among the scattered parts into which their chequered evolution had divided the Germans.

Count Rudolf of Habsburg was elected Emperor in 1273, because the power of his house was so insignificant that the other German Princes did not fear him. He began, however, at once to marry his daughters to powerful princes, and in the policy of political marriages which has been a characteristic of the House of Habsburg, they were for a long time more successful than most other dynasties, which all followed the same policy. In 1477 Maximilian married Marie, the heiress of the Duke of Burgundy. His son Philip married Johanna, the daughter of Ferdinand the Catholic of Aragon, and the son of Philip, Karl V, united the Spanish Monarchy with the German Imperial Crown, thus raising the family to the summit of its glory.

During more than five hundred years the House of Habsburg wielded a paramount influence upon the destiny of Europe, an influence *which was always and without exception baneful*. This family has been singularly devoid of gifts; it has not produced one great man during its long and inglorious history. Nearly all its members have been narrow-minded bigots, culminating in the criminal lunacy of a Philip II. During generation after generation they have possessed a capacity, amounting almost to genius, for pursuing their egoistical dynastic interests without any regard to the welfare of the mixed races over whom they have, by accident, come to reign.

It was a terrible misfortune for the German nation that the Imperial Crown gradually, in the transition from the Middle

Ages to the Modern Era, became hereditary in the House of Habsburg with their many non-German possessions. At their door lie the murder of Huss and the full responsibility for the Thirty Years' War, which not only devastated Germany materially to such an extent that it took the country quite a century to recover, but which also threw its civilization back for generations.

How much the German nation had lost by not having become united as the other Western peoples, and by not having been freed from the fetters of mediæval feudalism, can best be measured by the final outcome of the Thirty Years' War as settled in the Peace of Westphalia of October 1648. The sovereignty was thereby formally recognized of all the principalities, large and small alike, into which the Empire had been broken up. As to the religion which had been the cause, or, at any rate, the pretext of the war, it was decided that each Prince should have *Jus sacrorum*; that is to say, his religion should, *eo ipso*, be the religion of his subjects. The peace was dictated by foreign Powers, not agreed upon by the Germans themselves, although the war had been fought in their country, and had been started by the Habsburgs in order to destroy the religious liberty of their subjects.

Anything more degrading than the terms of this peace it would be impossible to imagine. That the Germans did not revolt against such monstrosity proves that the intellectual and moral development of the nation had at that time hardly begun. The Empire had really developed into a Republic of Princes. The Bund was represented by the Bundestag, one of the most cumbersome and impotent political institutions which ever existed. The Imperial Crown therefore did not add much to the power of the House of Habsburg, which had inherited what little there was left of the German monarchy.

The Crown had completely failed to make of the Germans one nation, as it had also failed to break the power of the feudal aristocracy. But both the Habsburgs and the sovereigns in the many petty states into which the country had been divided, imitated the monarchs of France during their ascendancy, and usurped for themselves absolute powers. The aristocracy, and, in the Roman Catholic States, the Clergy, obtained from the Sovereigns the most absurd privileges.

The Habsburgs might have excused their egoistical dynastic policy as being necessary for holding together the mixed population of the many states which formed their family possessions. Racial antagonisms manifested themselves long before the nationalist movement of the nineteenth century began, and on more than one occasion the dynasty was the only chain which kept the many countries with different races together. During the centuries in which they have ruled, the Habsburg policy has developed into the worst despotism which Europe has ever experienced, with the most savage suppression of the subject races. The Habsburgs used first the Spaniards, afterwards the Germans, to crush Italy under a tyranny of which it is difficult to say whether it was more stupid than cruel, or more bigoted than it was stupid; and they have used, and still¹ use, the Germans and the Magyars to oppress the Slavs who form the great majority of their subjects. At the same time they maintain the privileges of the landed aristocracy and of the clergy as they are maintained in no other country of Europe. Among these privileges is exemption from taxation.

It might be asked why the oppressed nationalities do not revolt and throw off this combined yoke of the Habsburgs and of the two dominant races in the Dual Monarchy. The answer is very simple: in a modern military state the army has become an absolutely perfect instrument of oppression. As long as the ruler of the state retains the control of the military organization, a revolution is an impossibility. In Austria-Hungary, in particular, the army has been organized in such a manner that for the subject races to try to raise a national movement for mutiny in the army is altogether out of the question. Long before it would be possible to bring a regiment, not to speak of an army corps, into open mutiny, the secret of the agitation would have reached headquarters in Vienna, and the would-be rebels would find themselves surrounded and shot down by "loyal," that is to say, German or Magyar troops.

The anachronism of a reigning house which follows, generation after generation, a purely dynastic policy, and which uses two dominant races for the despotic suppression of a large number of subject races, is therefore likely to be perpetuated, unless

¹ It must be remembered that this was written in 1917.

militarism itself, which has for a long time been threatening to crush the free development of Europe, is broken to pieces by the present war.

A glance at a map of Germany in the seventeenth and eighteenth centuries shows how hopelessly it had been broken up into fragments. Particularly in the West the innumerable principalities formed a bewildering maze. In most of these petty states the history of the ruling families after the Thirty Years' War reveals nothing but narrow-minded coarseness which tried as best it could to imitate the absolutism and immorality of the Court of Versailles, and succeeded only in producing a glittering counterfeit. Each of the numerous small courts created its own servile nobility, and the smaller they were the more punctiliously did they insist upon an etiquette which reduced those who were outside the pale of the nobility to the most ridiculous insignificance. These squandering courts required a great deal of money to keep up their luxury, and for many of them French gold was a regular and ignoble source of revenue. Many are the small towns in Germany which were once sovereign residences, and which have been embellished by their rulers during this period; but this apparent brilliancy was purchased at a high cost. The lower classes were oppressed to a terrible extent. The rural population had for the greater part been reduced almost to bondage; trade and industry could not flourish, because each petty Sovereign had the power of imposing duty and customs barriers at his frontiers. The monetary systems differed, and the currency was frequently debased. The laws differed in the hundreds of principalities or towns, and there was no Imperial power which could create great public roads or other means of communication from one part of the Empire to another. It is characteristic that it was not until 1767 that the Rhine became a "free" river. At the end of the fourteenth century there had been not less than sixty-two customs stations on that waterway, at each of which the traffic was held up to pay toll. And several towns, as Cologne, Mainz, Speier, and Strassburg, possessed the so-called *stapel* right, which meant that goods going up- or downstream had to be landed at these places and offered for sale, before being allowed to pass to their destination. The *stapel*

right of Cologne was not abolished until 1831, when navigation on the Rhine was at last made quite free.

In addition to these many obstacles to the national unification of the German people—the disintegration of the country, the narrow-mindedness of most of the Sovereigns, their stupid despotism, the oppression of the lower classes, and the barriers to internal trade—the nation has suffered greatly from the cleavage which the Reformation caused, and the unholy settlement of the Peace of Westphalia. As regards religious intolerance there is not much to choose between Roman Catholicism and orthodox Lutheranism, the latter being one of the least spiritual and most dogmatic of the great Christian Churches.

From a very early period in their history it is recorded of the Germans that they were diligent students of the learned sciences, and this studious habit they have always retained. The German nation, nevertheless, has hardly created one of the great ideas which have made epochs in the evolution of European civilization, either in philosophy, in the arts, with the single exception of music, or in engineering or other branches of industry. The Germans would therefore seem to be singularly lacking in the creative faculty of imagination, but to possess rather a great capacity for absorbing the ideas of others, and for developing them further.

Self-government is the most important manifestation of human culture, for it is the indispensable basis of all progressive activity by society, and it presupposes some of the highest virtues—love of liberty, respect for others, willingness for self-sacrifice. As the Germans have never been able to reach the stage of self-government, there must be something very essential lacking in their intellectual and moral constitution. This feature is probably connected somehow with their lack of imaginative power.

The Germans have possessed a faculty for obedience to their superiors, nearly akin to genius, but it is accompanied by an arrogant disregard for those who have been weaker than themselves. During their whole history they have treated other nations badly when they have been strong enough to do so. It will be sufficient to mention the brutal policy of the Hansa, and the barbarous behaviour in Italy of the German

Emperors from the Middle Ages, or the treatment of the Danes, the Poles, the Slavs, the French in Alsace during our own time. The same trait characterizes the relation within Germany itself between the nobility and the other classes, between employers and employes, and even between officials of a higher grade and those of a lower. The Germans have therefore always been disliked by other nations with whom they have come in contact.

Just as it was a misfortune for the Germans that the Imperial Crown finally fell to the lot of the Habsburgs, so it has been an immense gain to them, and indirectly to the whole of Europe, that the House of Hohenzollern was transplanted from Nuremberg to Brandenburg; for when the Germans could not work out their national salvation for themselves, it was necessary that a masterful dynasty should do it for them. On July 8, 1411, the Emperor Sigismund appointed Friederich, Burgrave of Nuremberg, to be *obersten Hauptmann und Verweser*, that is to say, Royal Governor of the Mark of Brandenburg, in recognition of his great services to the King and the Empire. And on April 30, 1415, after Friederich had further greatly distinguished himself in the public service, the Emperor granted him as a ffeoff the Margravate of Brandenburg with the Electorate. From this latter date the Prussian Hohenzollerns reckon the beginning of their House, which could therefore, in 1915, celebrate its 500th anniversary.

History offers many examples of personal accidents which have changed the trend of evolution, but it will not be easy to find a more poignant instance than that of the Hohenzollerns of the paramount influence which a single family may, under favourable circumstances, exercise upon the destiny of a country when they follow persistently a dominant idea during many generations. This absorbing idea of the Hohenzollerns has been a never-ceasing ambition to increase the power of their dynasty. There is nothing in their history to fire enthusiasm, or to remind one of an Alexander, a Cæsar, a Charlemagne, or a Napoleon. Even Frederick the Great can hardly be reckoned as a genius when compared with such giants. When it is remembered, however, what a small, poor, and badly disordered country the Mark of Brandenburg was,

when the Hohenzollerns took it in hand, one cannot help admiring the dogged pertinacity of the dynasty which has succeeded in moulding Prussia, in many respects, into a model kingdom and which has accomplished single-handed the remarkable feat of creating a United Germany.

Many of the means which they have employed must, from a modern West European political and moral standpoint, be condemned; but there are certain things which ought to be remembered in justice to the Hohenzollerns. All other dynasties acted, in the period from 1500 and far into our own time, on the same cynically egoistic principles, and their unification of Germany has taken place recently, while the other Western States were united at a time when Europe had not yet come out of the barbarous stage. If the other countries had gone through the unifying process in the modern era, it would probably not, any more than in Germany, have been completed without recourse to violent measures.

At the end of the Migration of the Peoples, the countries along the southern coast of the Baltic, from the Elbe eastwards, were occupied by Wendic and other peoples belonging to the great Slav family. Charlemagne established by the Elbe several "Marks" under Margraves to defend the frontiers against the Slavs. Out of these the Mark of Brandenburg has grown.

By missionary work, by peaceful trade, and by many small border wars, the German influence was gradually extended eastwards. In the twelfth and thirteenth centuries there was a constant and very considerable immigration into the Slav countries east of the Elbe of German and Flemish colonists, who by their superior culture supplanted the sparse Wendic population, which was either exterminated or sank down into a suppressed class of landless cottagers who became villains. A mixture of blood took place, however, in these East Elbian countries which also extended to the upper classes, and which has produced a most remarkable mixed race, quite distinct from the other Germans, and which is particularly noticeable in the Mark of Brandenburg. This mixed race is realistic and practical, not much given to idealistic emotions. The remarkable systematizing and organizing capacity which is

popularly ascribed to the entire German nation, is more characteristic of the Prussians, or, rather, the Brandenburgians. A curious parallel is to be found in the Bulgarians, who possess many characteristics akin to those of the Prussians. The Bulgars, of Finnish stock, were few in number, but they have transformed the soft and emotional Slavs, with whom they amalgamated, into a singularly hard-headed people, of a dogged pertinacity, but with not much amiability about them. In both cases the softer traits of the dreamy Slav nature have been, as it were, transmuted into their very antithesis.

The colonization of the countries east of the Elbe was systematically encouraged by the Ascanian Margraves of Brandenburg, who, like all the contemporary princes, were eager to increase their dominions. The actual organization of the colonization of the open country and the foundation of towns is described by Otto Hintze thus. An enterprising man (locator) offered the ground landlord, the Margrave, to found a *Dorf*, or village. A sufficiently large tract of land was given to him, on his undertaking to find German settlers for it. The land was divided into a certain number of *Hufs*, of which the locator received two to four for his trouble, while the others were given to peasant settlers. When the settlement was completed, the locator became the *Schulze*, or local magistrate of the village. He held his land free of tax, but with the statute duty of doing "horse" service in time of war; the peasants had to pay a moderate yearly rent (*census*), but otherwise they were free men, and possessed an *Erbzinsrecht*; that is to say, the land, subject to paying the fixed rent, was hereditary in their family.

The towns were founded in an analogous manner, only they were generally founded not by one locator, but by what might be styled a syndicate of enterprising people. One of these became the *Schulze*, or town magistrate. In the towns the householders had to pay a house rent from which the *Schulze* was exempt.

In the country villages the old German *Gewanneinteilung* was the general rule, which was something similar to the still existing Russian *Mir* organization. The arable land consisted of several separate large areas, the *Gewanne*,

of which each peasant in the village possessed a strip, so that the arable land which composed each *Huf* was scattered, and very far from forming a compact and distinct farm. As each peasant was compelled to pass over the fields of his neighbours in order to reach his own strip of land, it followed from this *Gemengelage*, or common ownership of the ground, that the field work, ploughing, sowing, and reaping, had to be done by all participants jointly under the direction of the community. This *Flurzwang*, or the necessity of joint field work, precluded all individual enterprise, and made it necessary to retain the time-honoured form of cultivation, the *Dreifelderwirtschaft*, or the practice of three shifts: one year winter, the next year summer corn was grown, while the field lay *Brache*, or fallow, in the third year. A part of the land which belonged to the village, particularly the forests and pasturages, were "Commons," and were used by the village as a whole, and not by individuals.

Apart from the peasants, Knights (*Ritters*), or Squires, also lived in the villages. Some of these Knights may originally have been feudal ground landlords who had caused colonization on their own initiative, but others, and probably the majority, were originally servants of the Margrave, and not men who belonged to the high-born nobility, the only people who, under the mediæval feudal system, were looked upon as really free men. The land of the Knights was in any case originally included in the *Gemenge* with that of the peasants, but their possessions were generally somewhat larger than those of the majority of the peasants, and for the cultivation of their land they used cottagers (*Laten*) who were compelled to do *Frohndienste* or villain service for them.

In the thirteenth and fourteenth centuries the influence of feudalism began to produce a universal change in the political situation of the country, and in the position of the peasants and their relation to the Knights.

The *Landeshoheit*, or the supremacy of the Sovereign or of the great vassals during the Middle Ages, was shown by both administrative and judiciary functions which were not clearly separated. The power of administering justice contributed under the primitive conditions not a little to the income of the Sovereign, because the fines were wholly or partly

forfeited to him. It was a common practice to leave a part of these fines in lieu of salary to the Counts or other servants of the Sovereign, who presided on his behalf over the courts. The secular court servants of the Margraves (*ministeriales*) were taken from the middle of the thirteenth century mainly from the Knight class in place of high-born vassals, who did not undertake such functions except as a ffeoff.

This was an improvement, because it seemed to promise the organization, outside of feudalism, of a regular Civil Service under the direct control of the Sovereign, particularly in regard to the judiciary functions; but there were numerous exemptions from the authority of the sheriffs of the Sovereign which gradually quite undermined their local status. This was the usual mediæval institution which is generally called "Immunity," by which the authority of the Sovereign was expressly excluded from the domains of an ecclesiastical foundation, of a *Ritter* estate, or of a town community. The discharge of the functions of the Sovereign was as a privilege ceded by the act of immunity to the possessor of the domain as an hereditary right. This undermining of the German Empire for the benefit of feudalism also took place in the Mark of Brandenburg, and attained to very large dimensions. The result was to create patrimonial authorities in town and country, who exercised judiciary and police functions not as a public duty, but as an hereditary proprietary right.

To the mediæval mind it was quite natural to class a sovereign right which yielded a revenue among those useful things which might be disposed of, by sale or otherwise; and because the Margraves were in permanent need of money, the sheriffs' rights were gradually acquired in nearly all the villages by one or more Knights, who exercised the sheriff's functions. Where a Knight became the ground landlord and judge, there was naturally an end to the independence of the village community: the *Erbschulze*, who was subject to the Margrave, became a *Setzschulze* appointed by the ground landlord as the representative of his delegated sovereign power, and as leader of the community which depended on the *Flurzwang*.

In the towns, which were mostly small and unimportant, a similar development took place. They became practically independent by purchasing from the Margraves the market

privileges, etc., and the judiciary powers, or they became subject to Knights. In most of the towns patrician rule in the hands of a few wealthy families was, however, gradually developed. The patricians formed a wealthy merchant guild in opposition to the guilds of artisans, which led to frequent disturbances and not seldom to revolutionary upheavals. Only the guilds participated in the election of the town council; there was no common representation of the citizens as such.

Both the open country and the towns had thus been in the main withdrawn from the sovereign power of the Margraves, which produced a nearly total dissolution of the old administrative organization, and ended in the anarchy of the fourteenth century.

The income of the Margraves in the Ascanian time consisted, besides the revenues of the crown lands and the regalia, of taxes, the so-called *Bede* (*precaria, petitio, exactio*), which may have been in their origin a more or less voluntary donation, as the terms imply, but afterwards became a regular contribution to the expenses of government. On the occasion of a special demand for an extra *Bede* in 1280-83, to ransom the Prince, the Margrave was compelled to negotiate with the Knights and some of the towns. They demanded that irregular *Bede* should cease; the vassals and towns agreed to pay a fixed yearly amount, and in the future no extraordinary *Bede* should be levied except in the case of some great public calamity. This the Margrave had to promise on his oath. Should this oath be broken, the vassals reserved to themselves the right to offer armed resistance. This agreement was particularly advantageous to the nobility and the Knights. The Knights and their esquires were entirely exempted from the *Bede* for the land which they personally tilled, to the extent of four to six *Hufs*; if they used more land they agreed to pay the tax on the additional area. It was further conceded to the Knight landlords (*domini bonorum*) that their servants (*subditi vasallorum*) should be exempt from statute labour with horses in time of war. This public service of the subjects was probably at the same time converted into private statute labour for the landlord. It may be conjectured that this is the historic-legal foundation of the villanage of the peasants which afterwards developed in such a terrible manner.

To sell the *Bede* was declared illegal for the future, with the significant exception that it was lawful for a person who was bound to pay *Bede* to commute this obligation by paying a fixed sum.

There was a certain amount of jealousy and antagonism between the country nobility, with whom the Knights had become amalgamated, and the towns; and no general estates, consisting of the clergy, the nobility, and the town citizens, had as yet been evolved. (In this summary of the evolution of the Mark of Brandenburg I have followed Hintze.)

It was this disintegrated borderland, rapidly decaying, without internal order, and without strength to manifest itself externally, which was given as a token of Imperial gratitude to the Burgrave of Nuremberg.

In his introduction to the history of the Hohenzollerns, Hintze says: "The Mark of Brandenburg may be looked upon as the real kernel of the State which the Hohenzollerns have founded, and in many respects one may place by its side the old Prussian country of the Knights of the Sword; but the trend of expansion which has produced the Prussian State did not come from the nature of these principalities or their inhabitants. It is, on the contrary, due to the dynastic ambition of the Princely House which has worked during five hundred years, with varying fortune and merit, but upon the whole with exceptional political ability and purpose, in order to create on North German soil a State power, which in our time has become so strong that it could give the German nation the impetus and basis for recovering its State unity."

I am not going to take the reader in detail through the long history of the evolution of the Prussian State which is so well known. But I will attempt to show how the social structure of this State has been moulded in an ominous way by the policy of the Hohenzollerns.

Their first important task was to restore their newly-acquired land to its old power, and give it anew an ordered government. At the outset they were met with determined opposition from the Nobility and the Knights, who had by that time become absorbed in the nobility, and from the towns. They eventually

succeeded in crushing the insubordination of the vassals and the Knights, but to conciliate them they gradually conceded to the East Elbian aristocracy—the Junkers as they were afterwards called—an almost unlimited power over the peasants, who were not only reduced to bondage, but who had also in course of time to give up to the Knight-landlords the greater share of the land which had been their heritage. This is the origin of the extensive *Rittergüter*, or aristocratic estates in East Prussia. The opposition of the towns was likewise crushed, which resulted in fettering the liberty of the citizens; and by the mercantilistic policy which the Prussian rulers followed in a ruthless manner, they undermined the spirit of individual enterprise.

At the same time they succeeded in creating a more efficient and more economical Civil Service than existed in any other European State, and although their aggressive policy cost much money, nearly all the Princes of this house thoroughly grasped the fundamental financial principle that to obtain a large revenue in a poor country it is essential that the taxation shall not be so heavy that the productive capacity of the country is thereby impaired.

One more point must be considered. The Margraves made themselves the head of the Church, and this being stiff orthodox Lutheranism, the spiritual life of the nation was decidedly not strengthened by this arrangement.

The power of the Margraves increased in proportion as opposition was overcome, and ultimately their successors, the Kings, attained to absolute power. The aristocracy who had in the meantime become the obedient servants of the Prince, imbued with strong monarchical and martial instincts, were permitted the right of flogging recalcitrant peasants. The town citizens were closely fettered by the narrow-minded guilds or the bureaucratic state regulations of the *Manufacturen*. Free thought was stifled by the Church. Not a very brilliant society!

The chief aim of the thrifty internal policy of the Margraves, and the equally thrifty Kings, was to obtain thereby the means to carry out their foreign policy of aggrandizement which, under the then existing conditions, of necessity was a policy of constant aggressive warfare. The army was their first care,

and even the most parsimonious among them did not grudge the outlay that was needed for improving the efficiency of the army. From a German point of view, the results of this policy have abundantly demonstrated that it was, under the given circumstances, the right one. A long series of aggressive wars have been waged by the Margraves and by their successors, the Kings. These wars have nearly always been followed by extensions of the territory of the Prussian State, until finally King William could humble Austria, with the help of Bismarck, Moltke, and Roon, and crush France, so that he could be proclaimed Emperor of the Germans at Versailles.

During the last three or four hundred years the rulers of Prussia have constantly been under the obligation to defend themselves, both in the West against France—a consequence of the agreement of Verdun in 843—and in the East against the Slavs; first Poland, afterwards Russia. Very often, too, they have lived in open or concealed enmity with Austria. It has been the habitual policy of the Hohenzollerns to take the offensive whenever they believed, or desired, a war to be imminent.

Such a policy, when continued during centuries, must in the long run create in the minds of the citizens the feeling that wars are unavoidable. That being so, it is not difficult to understand how the idea that wars of aggression are justifiable could take a firm hold of the subjects of the Hohenzollerns. The attitude of the Germans on this question since the outbreak of the present war, which has so greatly shocked other nations, had been inculcated into them by their rulers.

As it would seem that the Germans have by nature hardly any aptitude for self-government, it is not to be wondered at that they have without any qualms acquiesced in absolutism, when the Hohenzollerns, who have practised this form of government, have thereby obtained for them what they consider to be such happy results.

In the 385 years between the enfeoffment of the Burgrave of Nuremberg with the Mark of Brandenburg, and the year 1800, the Hohenzollerns had accomplished great things. They had become Kings with absolute power. Their State had increased beyond recognition in area and population. The

country, although still comparatively poor, had made considerable economic progress. Prussia, which had just passed relatively unscathed through the Seven Years' War, had thereby won a certain position in the polity of Europe, being the second Power in the German Bund next to Austria.

This long past had, however, only been a preparation for the much more powerful happenings during the nineteenth century, which were destined to raise the Hohenzollerns to be the rulers of a United Germany, ranking as one of the Great Powers, and Germany herself to be one of the foremost industrial countries in the world.

To understand what Germany stands for to-day, her history in the last 116 years must be always considered in contrast with the great revolution in France, and the more peaceful evolution which has gradually changed England into a relatively democratic State.

The monarchy of France had broken the feudal system hundreds of years before the Hohenzollerns became connected with the Mark of Brandenburg, and had thus created a national State; but they had allowed the aristocracy to retain its privileges, on condition of their absolute surrender to the King. The French aristocracy abused their privileges, as do all aristocracies when not prevented by very strong popular safeguards. *L'ancien régime* fell to pieces because the Kings, losing all grasp of realities under the curse of their despotism, had permitted the aristocracy to oppress and harass the lower classes most shamefully. At the same time the French Kings had not been strong enough to prevent the Gallic mind, more fertile in its imaginative power than that of any other European people, from creating new life-giving ideas of Liberty and Equality. These ideas permeated slowly to the lower classes, and created a universal feeling of abhorrence of the foul injustice which was being perpetrated upon the people.

If the Court had not been so hopelessly incompetent, France might have been spared the anarchy of the Revolution with its Period of Terror; and if the French people had been less logical in their mental constitution, the Revolution might have brought them more real freedom, and they might have escaped the Napoleonic Cæsarism with all its evil consequences. But the world would have been the poorer; for in that case the

revolutionary ideas would not have been so perfectly hammered out that they can shine for ever as beacons for humanity on its march upwards to higher and higher planes.

The England of the beginning of last century was far from being a democracy. But ever since Magna Charta it had been progressing, slowly but steadily, towards a constitutional organization in which the government of the people by the people might in the end be realized ; and it had forged for itself through endless struggles of many centuries an instrument by which reforms were obtainable by legal means. The power of the State lay in the hands, nominally of the people, in reality of two aristocratic parties ; the franchise was greatly restricted ; rotten boroughs played by far too great a rôle. The fate of the country was nevertheless decided at the polls. The consciousness of this great fact has sufficed to maintain in England, even in her darkest periods, the spirit of liberty, and the electors have successfully used their power to do away with abuses, although only piecemeal. The turning-point in modern English history was the great Reform Act of 1832, which has been followed by many others, among them not the least important being the repeal of the Corn Laws. The history of England since 1800 has been a constant record of the practical and more and more complete realization of the idea of liberty and justice, one form of liberty being Free Trade, which means much more than merely the abolition of prohibitive customs duties. The root idea underlying Free Trade is that of the right of the individual to full independence in all his economic undertakings and relations. In other connexions I have pointed out that this principle is not logically carried out as long as landlordism, a remnant from the feudal system, is still maintained ; and in England where there has never been any tendency, as in France, to carry ideas to their logical conclusion, society is still hampered by a great many similar anomalous survivals.

In different ways, in accordance with their individualities and idiosyncrasies, France and England have moved during the last hundred years in a moral and political direction tending to create an enlightened public opinion, and to place the safety of the State to a constantly growing extent under its supreme control.

The starting-point of Prussia in 1800 was not a somewhat fantastic Republican renewal as in France, nor the Constitutional Parliamentarism of England, with all its imperfections and shortcomings, but the political conditions which had found their most complete expression in the enlightened despotism of Frederick the Great.

The Hohenzollerns had given their country State unity and a well-ordered, though rather pedantic government, but not social justice. The German nation outside of Prussia lived under a dispersion which did not make a good breeding-ground for great idealistic thoughts. The many absurd barriers prevented business on a large scale, the universal despotism precluded enlightened political activity, the whole atmosphere became sordid and narrow-minded.

Only one idea had taken firm hold of Prussian consciousness, that of war, and their history had taught them to look upon aggressive wars as fully justified if only they were successful.

When Napoleon began to hurl his legions against antiquated monarchical Europe, the Princes of South-Western Germany, instead of courageously uniting against the invader, became, from pusillanimous fear and sordid egoistical motives, his subservient vassals. It is characteristic of German opinion that even Goethe was fascinated by the marvellous genius of the new Cæsar.

The policy of Prussia vacillated because the King tried, as long as possible, to remain neutral. This proved in the end to be an untenable position, and at Jena it was demonstrated that the military system of Frederick the Great had become obsolete. The humiliated Prussia, which had lost all its Western and part of its Eastern provinces, was forced to contribute its contingent of soldiers to *la grande armée*, at the head of which Napoleon marched against Moscow.

In this hour of its greatest danger, when the Prussian State seemed on the point of utter collapse, it was saved by its citizens, who rose as one man to defend the Fatherland. The weak King at last complied with the patriotic entreaties of his late heroic Consort, Queen Louise, when he placed himself in 1813 at the head of his people in arms. And at Waterloo the English and the Prussians put a final stop to the career of the little Corsican.

It was the divided German nation which had fought the Emperor and won the victory, almost in spite of their many rulers ; and the peoples of the different states demanded as their just reward a modest share in the direction of their own affairs, some relaxation of the fetters which absolute governments had placed upon their patient shoulders, the redress of the most crying social evils from which they suffered. Wise counsellors of the Prussian King, as Freiherr von Stein and Hardenberg, had strongly urged reforms, and some of the frightened Sovereigns had promised, during the dark period of the war, to give their people a constitutional government. In the South of Germany the thundering message of the French Revolution had aroused the conscience of some of the best elements in the people, and a spiritual movement was started which aspired to the liberation of their nation in a united State. This movement was doomed to failure because of its grotesquely unpractical leadership. Many Southerners began at that time to look to Prussia for the realization of their dreamy hopes, but they received scant sympathy from the unemotional North. The King of Prussia did not absolutely break his promises, but the Constitution which he ultimately granted as an act of royal grace, only gave his people the semblance of political rights. The small concessions to popular wishes were nullified by the institution of the *Herrenhaus*, the tripartite franchise according to census, and the public poll. The power of the Junkers was rather strengthened than otherwise by the new Constitution, and a result of this was that the urgently needed reforms of the land laws were not carried through, and the abolition of the bondage of the peasants was completed in such a way that the majority of the peasants, some 100,000, gave up their land. The Junkers appropriated it and replaced the previous occupants by labourers. Thereby the landed property of the aristocrats was greatly increased about the middle of the nineteenth century. In the Prussian State the influence of the landed aristocracy is still the dominant factor, next to the King of Prussia, who not only reigns but also governs ; and in the last instance the royal will is as absolute now as it was in the period of Frederick the Great.

In 1848 a street tumult broke out in Berlin—it can hardly be described as a revolution—but some further concessions had

to be made to popular political demands ; they did not, however, go far enough to alter the fundamental fact that the King was and remained the dominant power in Prussia, particularly in everything appertaining to the organization of the army. The explanation of the futility of this attempt to obtain real political liberties is, that the idea of a strong fighting monarchy had taken such a hold on the public mind that in a serious crisis the people shrank from going to extreme measures against the Crown. Instinctively it was felt that a strong monarchy was a necessity for their State, on account of its geographical position ; and besides, as long as the King held the military organization in his hands, a revolution was an impossibility.

As to the German Empire, *Das heilige Römische Reich deutscher Nation*, it continued its moribund existence with the figment of a political assembly, the Bundestag at Frankfurt. Napoleon had brushed away in his ruthless manner some of the dry leaves of petty German Sovereignties, but enough remained, and to spare, for continuing the sorry dismemberment of the nation. Modern life-giving thoughts of national unity, liberty, and progress could not possibly thrive in such a country.

As if all this were not sufficient to prevent the realization of the popular aspirations, the sinister influence of Austria strengthened all the petty Sovereigns in their reactionary opposition. That cynical statesman, Metternich, who called the Holy Alliance "a sounding nothing," had a genuine fear of the introduction of constitutional ideas in the conglomeration of states of which the Austrian Empire consisted, and to combat such ideas elsewhere, more particularly in Germany, was the great aim of his policy.

He also feared the tendencies, which could not be ignored, towards a reconciliation of the different German small States to Prussia, and he worked with great skill and subtilty on the racial and political antagonism of the South Germans against Prussia, as well as upon the sordid dynastic egoism of the Sovereigns in the many petty states, who feared both the liberalism of their subjects and the growing power of Prussia.

Nothing, however, could in the long run prevent the great and inspiring idea of the unification of the German nation from steadily taking a firmer hold of the masses. It must be remembered that the Nationalist movement was one of the most

widely diffused and active political ideas of the nineteenth century; and among serious German politicians, belonging to different states, the conviction was growing that the desired goal could only be gained under the leadership of the Prussian Crown.

The antagonism between the two great German Powers, Austria and Prussia, therefore constantly increased. Under such conditions King William, not unnaturally, considered it nothing less than his duty to increase his army, both in numbers and efficiency, but he was met by a stout opposition. The Diet wished to use the occasion to strengthen its political power; the Crown, making use of a flaw in the Constitution, decided to carry out the army programme which had been decided upon, in spite of the refusal of the necessary votes.

It was at this serious crisis that Bismarck took the helm of State in his strong hands.

It is characteristic of the man and the State, that he inaugurated his foreign policy by an attack, jointly with Austria, on Denmark, in opposition to the popular desire everywhere in Germany for support of the Augustenborg pretender. In the imbroglio which followed about the question of dividing the spoils of the Danish war, the tension between Prussia and Austria threatened to reach breaking point. Following the example of Frederick the Great, Bismarck induced the King to forestall the inevitable by an attack on Austria. The campaign was a short one, not more than a fortnight, and at Sadowa Austria was finally driven out of Germany, and the Bund was dissolved. The superiority of the Prussian army was again brilliantly vindicated. Those of the smaller states in the North, which had openly opposed Prussia, were incorporated in that State, and secret arrangements were concluded with the rest of the German Sovereigns.

Thus strengthened, Bismarck could follow his machiavelian policy of goading the Emperor Napoleon on to an attack which was an essential condition for uniting Germany according to his theory. Despising in his Junker heart the idealistic but frothy popular aspirations for the unification of the country, he declared—which was also characteristic of himself and the State—that it could only be attained by a policy of *Blut und Eisen*.

As a *Realpolitiker* he seldom miscalculated, and the war with France, which Napoleon had declared on July 15, 1870, developed, under the strategical leadership of Moltke, quite as Bismarck had anticipated. Already on September 2, at Sedan, the French defence was practically broken, although the Peace of Frankfurt was not concluded until May 10, 1871.

Bismarck did not make mistakes as a *Realpolitiker*; that is to say, he generally gained his immediate objectives. Both his political strategy and his tactics were first-rate, when considered from the point of view of the vanishing statecraft of past ages. But his own temperament, his social milieu as a Junker, and the traditional policy of the State which he served, prevented him from understanding the new liberal ideas which were destined to regulate in the future the social and political life of modern states and the international relations of the modern world. He was, let us hope, the last great statesman who was moulded by the ideas which governed Europe in the transition period between the decay of feudalism and the dawn of the modern democratic organization of the States of Europe. To him there was nothing abhorrent in the idea of beginning an aggressive war for the furtherance of his own schemes; neither did he feel the sinfulness of tearing away, by a successful war, districts which had become an integral part of another country, France. To him the divine right of the Kings of Prussia to govern their people according to their royal ideas was a settled matter, clear as the sun at noon. Considering the Constitution not as the natural right of the people, but as a practical expedient which had been adopted in a moment of necessity, he did not scruple to use the political factions in turn as a means to carry out his policy of the day. Did he not hold his high position by the confidence of his Master? Neither the Reichstag of the Empire nor the Prussian Diet had the power to remove him; then why should he seriously treat them as if they really were, what they pretended to be, the exponents of the will of the people? The will of the people, forsooth! it should not prevail further than he, Bismarck, and the Emperor-King thought was good for the interests of the dynasty and—a long way after—for the people themselves.

If anyone is inclined to call this a travesty of Bismarck and German politics, let him ponder upon the refusal to reform the

Prussian franchise, the anti-socialist legislation, the *Kulturkampf*, the Protectionist policy, and, above all, upon the constant increase of the army, the upholding of the aristocratic military caste, of the military duels—in short, let him study the Bismarckian policy of *Blut und Eisen* in all its internal and external consequences. The mailed fist as prepared by the Hohenzollerns during five hundred years, and greatly strengthened by Bismarck, was a direct denial of all the ideals of the modern man, a permanent menace to all peaceful countries in Europe and the other continents, and it was the throttling of the right of the German nation to govern itself.

On several occasions Bismarck caused it to be known that he considered Mr. Gladstone as his political and personal antithesis. Gladstone, the constitutional politician, could not deal with problems in the same *realpolitical* manner as the omnipotent *Reichskanzler*, and his education had given him an entirely different grasp of realities. But it is easy to understand that his dialectical methods, which were not always above reproach, would make him distasteful to Bismarck. The impulses from the noble heart of Gladstone will, however, always remain a living force, for they have been absorbed in a growing organism, the British Constitution, and in the political thoughts of his countrymen. Much of the political system of the great Prussian statesman will disappear, as did the artificial arrangements of the dynastic cabinets of past centuries, because they were not in consonance with the great ideas which are shaping the future evolution of our civilization—the ideas of the liberty of the individual, of social justice and equity within the different countries, and of justice and equity in the international dealings between the various States.

But destiny makes use of manifold tools to shape the course of evolution, and the masterpiece of the great German statesman, that he succeeded in placing the many German States in the crucible, and thereof hammered out a United Germany, will always remain, because the unity of the German nation is a necessity for humanity as well as for the children of the Fatherland.

CHAPTER XI

THE INDUSTRIAL RENAISSANCE OF GERMANY

SUCH an event as the unification of a great nation after nearly a thousand years of division, an event of the most far-reaching importance, in any nation other than the German, would have been the signal for a great movement for obtaining the political deliverance of the people. Everything had to be done to come into line, politically speaking, with the other and more fortunate Western nations who had enjoyed State unity and political rights during centuries.

Politics were not an alluring field of activity for the best intellects in a country where it was in the last instance Bismarck, and not the representatives of the people, who decided what was to be done, and how it should be shaped. The German nation as a whole, and the Prussians in particular, were so well trained in the habit of being regulated from above that they did not feel it as a degradation that they were not masters in their own house like the other Western peoples. The Social Democrats gained many seats in the Reichstag in spite of the exceptional laws, and this frightened the academic and industrial classes so much that they were glad to have in the Crown a strong bulwark against *demagogische Umtriebe*. Germany has, therefore, remained to this day an anachronism, with an almost absolute monarchy and a privileged aristocracy, with whom has become associated since the Franco-German War a powerful new plutocracy under the leadership of Kommerzienräthen.

The establishment of the Empire caused, however, an immense wave of national enthusiasm. The many great abilities of the people which had been slumbering during such a long time, were suddenly awakened and stimulated in the most extraordinary manner. The nation instantly felt that the

energy which had been accumulated was a great living force for which they had to find an outlet; and because politics were excluded, it is psychologically quite easy to understand how it happened that the new Germany came to direct the enormous sum of intellectual and physical strength which it possessed towards this one aim: the utilization to the fullest extent of the material resources of the country.

To appreciate fully what the German people have achieved in the short span of time since 1871, it is necessary to glance briefly at the economic and industrial state of the country before that date.

The French Revolution and the Republican and Napoleonic wars began shortly after the modern industrial era had been ushered in by the many brilliant inventions of power machinery and new methods of production which had been made in England between 1760 and 1790. These inventions could at once be utilized in England, although she was involved in wars for nearly twenty years, because she was a rich country and protected by the sea. Germany, on the other hand, was frequently itself the seat of war, and was a poor country, for its dismemberment had prevented trade from developing properly, and it had only quite recently recovered from the devastation of the Thirty Years' War. The few *Manufacturen* which existed as an inheritance from the mercantilistic period were mostly small, and had few and inexpensive mechanical appliances and no power machinery. The Germans had, therefore, not much experience in the management of industrial undertakings on a large scale. At the end of the Napoleonic wars the country was far too much exhausted to be able to begin at once an industrial competition with England, for which it also lacked almost completely the assistance of an oversea trade.

It was only towards the middle of the nineteenth century that Germany could be said to have begun her industrial career, and England had thus a start in modern industrialism of nearly seventy years. It is characteristic that the first steam engine in Westphalia was installed in 1797 at the Vollmund coal mine. Twenty years afterwards there were only twenty steam engines in the district, and their number did not increase rapidly before 1850. For a time the construction of railways also proceeded at rather a slow rate. The coal industry, which

dates back to the fourteenth century, was little developed, and its output increased very slowly during the first half of the nineteenth century. In the Westphalian district, one of the most important in the country, the output in 1800 was not more than 130,000 tons; in 1830, 571,000 tons; and in 1850 not more than 1,665,000 tons. It afterwards increased rapidly from 11,812,000 tons in 1870 to 82,803,000 tons in 1909. The iron industry had commenced in Rhineland and Westphalia about 1750, at which time small charcoal blast furnaces were started. Hammer works were not introduced before 1812, puddling works in 1835, and it was indicative of great progress when Gutehoffnungshütte established, towards the middle of the century, a rolling mill for rods and plates. 1844 marks an epoch in the history of the German iron industry, for in that year the Customs Union placed a small duty upon imported pig-iron, and at the same time methods were introduced for making coke from Ruhr coal. This led to a more rapid increase in the output of iron, and it became necessary for the iron works in the Ruhr district to import iron ores from other parts of Germany and from abroad. There had thus been a steady progress in the iron industry, but it had not reached to large dimensions before that dividing line was drawn in the political and economic history of the nation, the Franco-German War.

Commerce kept within moderate dimensions, and as a result of the unsatisfactory political and economic conditions under which they had to work, the business men of the country were, as a rule, rather timid and limited in their operations and commercial methods. But they were everywhere known as hard-working, painstaking, and very economical, not to say parsimonious. Such men are not generally audacious pioneers in undertakings which require the use of large capital, and which do not promise a rapid return.

One important branch of production, viz. agriculture, was an exception from the general stagnation, and has made considerable progress during the first half of the nineteenth century, after the introduction of suitable reforms of the land laws. Owing to the growth of the industrial population of Europe, particularly in England, cereals and other agricultural produce commanded high prices, and the Prussian Junkers, who carried

on farming on a large scale and were large exporters of cereals, knew how to make large estates yield a handsome revenue.

The Prussian Government had, during the first half of the century, done much for the education of the people. Elementary and classical schools had been improved, and technical education had been initiated. The first technical schools were established in the decade 1840-50. Naturally they did not at once show great results, and their number therefore did not rapidly increase, but these schools nevertheless laid a solid foundation for future industrial evolution.

Prussia had inaugurated an innovation which was destined to pave the way for the coming unification of the German nation, viz. the organization of the North German *Zollverein*, or Customs Union. The Prussian Customs Law of 1818 had broken with the mercantilistic system and had fixed a moderate import duty of about ten per cent. *ad valorem* on foreign manufactures, and double as much on Colonial produce. The little principality of Schwarzburg-Sonderhausen entered the following year into a compact with Prussia, by which the latter undertook the collection of the customs duties of the kingdom against payment of a fixed part of the joint income. In most other German States the protective spirit was so strong that even petty principalities which were enclaves within Prussia tried for nearly ten years to avoid entering into such a *Verein*.

A protectionist customs union with high tariffs was formed between Bavaria and Würtemberg. Hessen-Darmstadt did not join this South German Union, but came, on the contrary, to an agreement with Prussia. This was imitated in the arrangements which were afterwards made with a number of other states, and was concluded for a period of six years. Meanwhile a Middle-German Customs Union had also been formed, but this was gradually absorbed in the North German Union, into which nearly all the States of North and Middle Germany had entered by 1833. The turnpikes were done away with on New Year's Eve 1833-34 on most of the German main roads. The collection of the frontier customs duties in the whole area of the *Zollverein* was managed by Prussia, and the income was divided between the participating States in fixed proportions.

This was a reform of the very highest order, for it created a

strong bond of economic community among those States which were comprised in the Union, and trade began to expand because it was freed from the old fetters, and had obtained an extensive inland market. Prussia had not come off well in the fixing of the quota of division, and in the Prussian Government there was on that account opposition to the Union, but fortunately for Germany this opposition was not successful.

At the beginning, and during the first three or four decades of the nineteenth century, it was the universal belief on the Continent that it was not possible to carry on a bank profitably unless it were permitted to issue notes. In nearly all Continental countries, a government concession was required for establishing a bank as a limited liability company, and most governments were afraid of additional banks being started in their countries, for they believed that unsound speculation would be engendered if banking facilities were increased. There was, therefore, hardly any innovation in the banking system or additions to the number of the existing institutions. There were one or more issuing banks in the different countries, and it was in the main left to private bankers, of whom there were a great many, to satisfy the credit requirements of the community.

Commercial or credit banks were unknown outside the Anglo-Saxon countries before 1830. In the ten years 1830-40 Europe began to recover slowly from the extreme exhaustion which the Napoleonic wars had caused; the credit demands increased, and the absence of suitable credit institutions made itself felt, particularly for discounting bills of exchange.

The first country in which banks for this purpose were established was France; so-called departmental issuing banks were started, some in 1817-18, some about 1830, but in 1836 these banks were absorbed by the Banque de France when it was permitted to open branches.

During the thirties industrial and transport undertakings were frequently established in France as limited liability companies, and the French bankers wished to apply this system to banks also. But the Government, remembering the Law swindle, stoutly refused concessions. In 1837 a Paris banker, Jacques Lafitte, hit upon an ingenious plan of getting

out of this dilemma by making his bank, the *Caisse générale du commerce et de l'industrie*, a so-called commandite company, because in that form it might be started without a Government concession. It had a capital of fifteen million francs, and soon did a large business, mostly in discounting bills; and a number of similar institutions were started. Nearly all of them were, however, ruined in consequence of the revolution of 1848.

Towards the middle of the century the economic organism of the Continent underwent a radical change, for at that time the industrialization which had commenced in England in the last decades of the eighteenth century, began to develop in the Continental countries, first of all in France. The result was everywhere a rapidly growing credit demand, and many plans were discussed for organizing banks to satisfy this demand.

In France, where the recently established private commandite banks had nearly all been swept away by the revolution of 1848, the first step which was taken was to establish new banks on the same system. But more important for the future was the establishment as a makeshift, on the initiative of the Government, of Discounting Offices, *Comptoirs d'Escompte*. These were afterwards continued with Government concessions as limited liability companies by the *Comptoir National d'Escompte de Paris* and a dozen similar companies in the provinces. Their principal field of activity lay in the discounting of bills of exchange, as the name implies. They were imitated in various countries.

In the meantime a credit institution, *Crédit Mobilier*, had been established in Paris on a novel and quite different principle.

St. Simon, the founder of the socialistic school which is known as St. Simonism, was an enthusiastic believer in a new civilization based upon industrialism. Some of his disciples took up and developed this part of his theories, which they applied among other things also to the problem of banking, their object being to place extensive credits at the disposal of those who would promote commerce, industry, railways, etc.

The brothers Emile and Isaac Percire, who were ardent followers of St. Simon, founded, in 1852, the *Société Générale du Crédit Mobilier Français* with a capital of sixty million francs, which at that time was considered enormous. It took for its principal field of operations the promotion of industry and the

means of communication, forming on its own initiative new undertakings, or placing on the market the shares and bonds of such concerns. It operated, thanks to its large capital, on a very big scale, extending its activity to every part of Europe. It produced an immense impression upon the public mind, being the first great bank without the right of issuing notes, and, by demonstrating that the note issue might be dispensed with, it made an epoch in the evolution of banking on the Continent of Europe.

Instead of being simply a passive intermediary between the borrowing industry and the investing public, it was an institution which itself actively created industry, founded new ventures, assisted old ones, and took the lead generally in economic evolution. By lending its own capital, still more by issuing industrial shares and bonds to the public, it placed credit at the disposal of industry on a hitherto unprecedented scale.

By its example it disproved the old idea that the real source of profit to the banks was their issue of notes, and it demonstrated that a commercial bank might earn large profits by being a promoter of industrial undertakings, and by procuring sufficient credit for industrial progress. The principles of *Crédit Mobilier* were studied everywhere, and its example has strongly influenced the subsequent development of banking on the Continent, not so much in France itself as in other countries.

As late as the end of the thirties the development of banking had hardly begun in Germany. Besides the Prussian State Bank there existed only three note-issuing banks, of which one was quite small, and a few unimportant *Kreditkassen*, or credit offices. The credit market was in the hands of the many private bankers, who operated mainly with their own capital, and only to a relatively small extent with deposits from the public.

This was generally felt to be an unsatisfactory state of things, and there were many plans for starting limited liability banks; but in nearly all the greater German States, and particularly in Prussia, the governments refused concessions to new banks when these did not intend to issue notes. The issue of notes was not a monopoly in Germany, and the governments were

rather less averse to granting concessions to note-issuing banks. Before 1840 three new banks of this character had been started, and in the years 1847 to 1857 a number of similar banks were established. In 1872, when the Reichsbank was established, there existed in Germany twenty-nine banks of issue, with an aggregate share capital of 310 million marks, deposits of 245 million marks, and a note circulation of 463 million marks. In consequence of the privileges which were granted to the Reichsbank, the note issue of the private banks afterwards gradually decreased, and is now quite unimportant.

These banks at first played a great rôle in the German credit market, but they were not destined to give the banking system of the country its character. Modern banking in Germany has been moulded by the great commercial banks which were started about the middle of the century, and which have adopted and further developed the leading ideas of *Crédit Mobilier*.

It has already been mentioned that there existed some small *Kreditkassen*, or credit offices. In 1831 *Kaufmannische Cassenverein zu Berlin* was established on the initiative of private bankers; in 1850 it was converted into a commandite company under the name of *Berliner Cassenverein*, and it still exists as a bank of moderate size.

David Hansemann founded in 1851 *Die Direction der Diskontogesellschaft* in Berlin, which he had to give the form of a commandite company, because the Government refused a concession to a limited liability company, while a commandite company might be started without a concession. It was at first almost exclusively a co-operative discounting and not a commercial bank, but it soon changed its character, and has since become the second largest of the *Grossbanken*, or leading commercial banks of the country.

Another of the future "great banks," *A. Schaafhausen'scher Bankverein Köln*, was started a little before *Diskontogesellschaft*, by the conversion into a limited liability company of a private banker's firm which found itself in financial difficulties.

The example of *Crédit Mobilier* was, however, immediately followed in Germany, and this gave the evolution of banking in that country an entirely new direction.

Amongst the founders of *Crédit Mobilier* was one of the leading private bankers of Germany, Abraham Oppenheim, of Cologne. He conceived the idea of founding a bank in Germany which should carry out all the theories of St. Simon. It was at first intended to establish this bank in Frankfurt, which was still the most important credit centre of the country, but a concession was refused in that Free City, and the bank was therefore established at Darmstadt in the neighbourhood of Frankfurt. Thus was created in 1853 *Bank für Handel und Industrie* in Darmstadt, usually called *Darmstädter Bank*. It was placed under the leadership of Gustav von Mevissen, Managing Director of *A. Schaafhausen'scher Bankverein*. The first annual report of the *Darmstädter Bank* contains the following passage: "It is the object of this bank to support large and solid concerns by its own participation, and by placing their shares and bonds among the public. Relying upon the bank having a better survey than the general public of the whole industrial situation in Germany, it should lead enterprise and capital into the right channels whereby they can best meet the requirements of the day."

This utterance is conceived entirely in the spirit of St. Simon, and the example of *Crédit Mobilier* was thus a determining factor in the management of the two first German commercial banks.

The subsequent development of German banking also followed on the lines of *Crédit Mobilier*. The great economic boom of 1856 made the need for banks felt more acutely than before, and in 1856 no less than eight banks without note issue were started, and *Diskontogesellschaft* was converted from a co-operative concern into a real bank. Most of these banks took the *Darmstädter Bank* as their prototype.

The Prussian Government still refused concessions. Under the leadership of Mevissen, Oppenheim, and Mendelsohn, *Berliner Handelsgesellschaft* was founded in 1856 as a commandite firm. The programme was a further development of those of *Crédit Mobilier* and *Darmstädter Bank*. Berlin had thereby obtained the second of its future *Grossbanken*. In Leipzig, *Allgemeine Deutsche Creditanstalt*, and in Hamburg the two institutions *Norddeutsche Bank* and *Vereinsbank* were established.

By the end of 1857 the number of commercial banks in Germany may be put down at fifteen. At first they did not attract much attention amongst the public, and their progress was rather slow. The crisis of 1857 caused heavy losses both to the commercial banks and the note-issuing banks, and no new banks were started between 1858 and 1864. The great bank-promoting period in Germany fell in the years 1869-73. In 1869 five important banks, and in the first half of 1870 four banks were founded, among them Deutsche Bank, which is now the largest bank in the world. In June 1870 the concession policy for limited companies was abolished in Prussia, and shortly afterwards in the Empire, which gave the signal for a veritable mania for bank promoting. In 1871 to 1872 it is on record that at least seventy-one banks were established; the number was probably somewhat larger, for at the end of 1872 the total number of non-issuing banks was 103, and in 1873 another five were started. But the banking requirements of the country had thus been quite satisfied, and many of the newly started banks went to pieces during the crisis of 1873. In 1883 *Der Deutsche Oeconomist*, on commencing its regular statistics of German banks, enumerates only seventy-one, although several of the issue banks had in the meantime been converted into commercial banks.

(The above summary of the development of banking on the Continent, and particularly in Germany, has been borrowed from Sven Brisman's very valuable work *De Moderna Affärsbankerna*.)

It is worth while to study the origin and evolution of the German banking system, because apart from her excellent scientific and technical education, there is nothing to which Germany more owes her rapid modern economic progress than to the powerful assistance of her admirably conducted banks. It is highly interesting to note that the tendency of the German commercial banks from their start was due to an impulse from the fertile brain and the inventive genius of the French nation. But it is only just to point out with the fullest emphasis that the intelligent and energetic German bank managers have considerably developed the original ideas, and have given their banks a much wider scope than their French competitors.

Before the Franco-German War and the establishment of the Empire, many things had thus happened to prepare the way for a more rapid economic progress. But that it burst forth with the elementary force of a volcanic eruption must be ascribed to the vivifying action upon the entire nation of a great idea which roused their enthusiasm. This life-giving idea was the joyful patriotic belief in the immense future of their united country.

Intoxicated by their victories and the feeling of their newly-acquired power, and also by the magical influence of the five milliards which France had to pay as war indemnity, the Germans wished to emulate in commercial and industrial world competition the victories of their armies on the French battlefields, and they threw themselves into the work with terrific eagerness. A speculative boom, the like of which the world had never before experienced, burst out and spread to all countries.

The studious habits which have always characterized the Germans, their scientific capacity, and the thorough-going education which their technical schools gave, all contributed to make it comparatively easy for them to imitate and adopt the methods of production which were in use in England and in the United States. The methodical public administration of Prussia had been a good school of preparation for the business men, who were to organize the relatively large business undertakings which were at once started in various branches of trade and industry. A great number of limited liability companies were established. The town population commenced to grow rapidly, which necessitated building operations on a large scale with rising prices for building sites. Everything seemed to flourish, and public opinion thoroughly relied upon the old but fallacious idea that "war is good for trade."

But the boom only lasted a very short time. The collapse of the land speculation of Wien in the autumn of 1873 gave the signal for a full stop and the unavoidable reaction, and the trade of the world entered upon a very severe and protracted depression which lasted till 1881-82.

One of the industries which had been most inflated was the iron and coal industry, which had one of the most important

centres in the Ruhr district, and that district had therefore to bear its full share of the reaction and heavy losses which followed upon the previous over-speculation. It had not been possible to avoid technical and financial blunders, when new methods were suddenly to be introduced, old works rapidly enlarged, or new ones on a big scale started, often by inexperienced people. The producing capacity of the works had been very much augmented, and on a falling market the ironmasters of the Rhine Province were cruelly undersold by English and Belgian makers. The industry had to pass through some years of terrible suffering, approaching complete ruin. It is characteristic of the situation that one of the best founded undertakings in the German iron trade, Gutehoffnungshütte, was obliged to write down its share capital from 30 to 6 million marks. What happened in this branch was experienced more or less in most branches of industry all over the country. There were numerous bankruptcies among banks, merchants, and industrialists.

At the most critical period, in the years 1878-79, Bismarck came to the rescue of the German industries with his Protective system. It is, at any rate, the prevalent opinion among German manufacturers that the marvellous industrial progress of their country during the following thirty years must be ascribed mainly to the *Wirtschaftspolitik* which Bismarck then introduced.

The so-called Catheder Socialists had already some time previously started an opposition to the Manchester School, and demanded that the State should regulate the economic and industrial activity of the country. The agrarians, who were Free Traders as long as they were to a large extent exporters, became Protectionists as soon as the wheat competition of America commenced to threaten them in their home markets. They therefore united easily with the manufacturers, who considered it a great mistake to abolish the import duty on pig-iron, which was under consideration in 1877. An association of industrials and agrarians for introducing a reform "for the protection of home labour" had been established in 1875.

Bismarck had not previously taken much interest in economic questions, and had allowed himself to be guided in his economic policy by men of Free Trade proclivities. But at this time he began personally to study the problems which were involved.

It is hardly probable that he ever attained to a full grasp of social-economic and industrial questions, and really reached personal convictions. One would think that such subjects must have been too far removed from his mental horizon. But at any rate he studied them, and he learned enough to make use of his knowledge for the furtherance of his general policy.

The great reform plans of Bismarck of 1878 comprised a change both in taxation and in politics. His idea was to introduce a heavy and general increase of the customs duties, with the double object "of protecting native labour" and of making the Empire financially independent. If the latter object could be achieved, the political parties would thereby be weakened. The Empire had previously been dependent upon matricular contributions from the separate States, which had to be voted each year by the Reichstag. By the new customs duties the Empire would be placed in receipt of a large income, so that instead of receiving contributions from the States it should be in a position to distribute financial grants among them. Bismarck looked upon Free Trade as obsolete; it might do well enough for a so highly developed industrial country as England, but not for Germany. There were strong Protectionist tendencies everywhere on the Continent, and the same ideas were also victorious in America. It was therefore necessary self-defence for Germany to follow the general tendency, and to introduce protective duties.

It would be foolish to deny that Protection has greatly stimulated, not only the industrial, but also the agricultural production of Germany, and that it has much accelerated the transition of the country to industrialism. The population has increased much more rapidly in the industrial than in the country districts.

But this rapid industrial progress has to a great extent been a hot-house growth at the expense of the German consumers. The import duties have repeatedly been raised, and in many branches of industry they are so high as to exclude altogether foreign competition. Behind this high tariff wall the output of the German industries expanded so much that it soon exceeded the requirements of the home markets. This would have led to a ruinous competition between the inland producers if they had not combined into a large number of

trade syndicates, or *Kartels*, to maintain high inland prices. In one form or another these syndicates restrict the supply for the inland market sufficiently to prevent prices from falling materially below a level equal to foreign prices plus customs duty. If the balance of production cannot be exported on a regular commercial basis, the *Kartels* pay an export bounty, which may occasionally be very high, to those of their members who undertake to export the necessary surplus quantity. On unfinished steel, for instance, the export premium sometimes reaches Mk.15 per ton, or 15 per cent. or more on the average market price; that is to say, German steel for structural building work may cost in foreign countries so much less than in Germany itself.

The result of the Protective system and the policy of the syndicates is therefore to compel the German public to pay for manufactured goods of German make a much higher price than they are sold at for export; as a rule the difference probably about equals the customs duties. The same thing applies to agricultural produce. The Drawback system, which was originally introduced for the benefit of the export millers who ground flour from imported corn, has, in course of time, been perverted in the interests of the Prussian Junkers in such a manner that the State pays a drawback equal to the duty, also when German-grown corn is exported, either in the whole state or as flour. In addition, the millers obtain a special bounty, which in some cases may be as much as Mk.1.50 per 100 kg. of flour. The consequence of this pernicious system is that the price of corn for home consumption in the German markets always runs Mk.50 per ton higher than the current price on the world market. While the State revenue from the corn duty is not considerable, because the home production covers upwards of 85 per cent. of the consumption, the German public must pay to the landowners a tax of Mk.5 on each 100 kg. which they sell. By far the largest part of the corn area in the East belongs to the Junkers, and one can therefore well understand their stubborn resistance to Free Trade or to any reduction, in the interests of the community, of the excessive corn duties. The total tax on bread corn which the consumers pay to the German landowners may probably be estimated at something like 1,000 million marks.

It is hardly excessive to assume the aggregate cost of the Protective system to the German public in the form of over-prices on German agricultural and industrial products to amount to at least 2,000 million marks, which is equal to nearly Mk.30 per individual, or Mk.150 for an average family of five persons. This is, of course, guesswork, but it is at any rate certain that it is an enormous sum which the German public must pay annually to private landowners and manufacturers, over and above the State revenues from the customs duties, as the price of the privilege of having "protection for home labour."

Wages of labour, and the salaries of public and private *Beamten*, or officials and clerks, have risen considerably since 1870. But even skilled labourers hardly earn in money wages as much as the same class in England, not to mention the United States. The salaries of the numerous *Beamten* are usually miserably low. "Wissen Sie nicht, Herr Sundt," said a German once to me; "dass wir hier in Deutschland eine Proletariat von gebildeten Leuten haben?" On the great, badly-paid mass of the people the protective duties with their accompaniment of high prices therefore press as an excessively heavy burden. But the landowners get rich; most of the big industrial companies yield splendid dividends; the directors obtain princely incomes, and a few of the higher officials are decently paid.

It is unlikely that Bismarck foresaw these evil consequences when he introduced his reform; and if he had been able to foresee them, he would in all probability have considered them to be in complete agreement with the fitness of things, or, at any rate, as only a minor defect; for he gained completely his immediate object, viz. to fill the coffers of the State and to make it practically independent of the money votes of the Reichstag. His Protective policy has contributed more than anything else which he did to perpetuate the absolute monarchy with its correlation, militarism.

The growing dependence on foreign markets of the rapidly increasing protected German industry has fostered in the nation a dangerous tendency to look upon foreign trade from a point of view very similar to that of militarism. Other nations also frequently speak of "conquering" foreign markets, but only as a metaphor. To the Germans only does it come natural

to use these words in a literal sense. Their traders regularly receive Government assistance in the shape of reduced export freights on the railways, subsidies to steamship companies, export drawbacks, etc., when it is the question of killing some special foreign competition by underselling it. Such things come natural to a nation which has grown during centuries by aggressive wars, and which has been united by the same means. This German attitude towards international trade may also be looked upon as an atavism, for the Hansa, when at the height of its power, acted in just the same spirit and used very similar methods.

Protection undoubtedly accelerated its progress, but the modern industrial evolution of Germany would not have reached its perfectly astonishing dimensions if it had not rested upon a much wider and more enduring foundation. It is due not to Protection, but to the inherent solid qualities of the German race, its thriftiness, industry, and discipline, to the scientific propensities of the German mind, assisted by the excellent technical training, and finally to the great systematizing and organizing faculty inherent in the Prussian nation.

The epoch-making fundamental technical inventions having already been made elsewhere, the Germans had no choice but to start their industrial career as imitators, and it may be doubted whether they would have been imaginative enough to initiate such revolutionary ideas. But they have proved themselves wonderful adepts in the art of carrying the ideas of others to theoretical and technical perfection. To their plodding patience and systematic scientific researches into the nature of the various complicated industrial processes, the world owes many of the most useful of the technical achievements of the last generation; for instance, the improvement of the coal-tar colours or the practical utilization of electrical energy.

The German customs tariff is remarkable for its thorough-going comprehensiveness; its authors have aimed at giving all branches of industry an equal degree of protection. But this is an impossible task, for in reality Protection can only give advantages to the few at the expense of the many. In the last instance it is of course the consumers who have to pay for it, but it is not possible to arrange a tariff, however

scientific, in such a way that it does not also hurt some branches of the producers. This is an unavoidable drawback due to the fact that the many different industries are dependent upon each other, the finished product of one industry being the raw material of other branches.

The tariff has been particularly favourable for what the Germans call the Montan industry; that is to say, the metallurgical industries based upon the mining of coal and ores. As this industry is usually carried on on a large scale by big concerns, it is in a particular degree adapted for being financed by the banks, who naturally prefer one large account to having the trouble of serving a great number of customers. It is much easier for the public to make itself acquainted with the movements in the shares and bonds of a comparatively small number of prominent and homogeneous concerns than to follow the quotations of a vast number of relatively small undertakings in many different branches of industry. The financial assistance which the German banks have been in the position to give to industry has mainly taken the form of issuing industrial securities through the various stock exchanges. The result has been that the metallurgical industries, and particularly the coal and iron industry, have had placed at their disposal a constantly increasing, and in the aggregate enormous amount of capital, while there are other branches of industry which complain both of a lack of capital and of the difficulty in which they are placed because they must pay more for their supply of iron and steel than their foreign competitors.

The outcome of all these factors has been a somewhat one-sided, but certainly admirable development of the steel production and of the allied trades, such as machinery and machine tools for iron works. The pig-iron production has grown thus :

	Germany Tons	Great Britain and Ireland Tons
1865 . . .	975,000	4,896,000
1875 . . .	2,029,000	6,432,000
1880 . . .	2,729,000	7,802,000
1890 . . .	4,658,000	8,033,000
1900 . . .	8,422,824	9,051,107
1904 . . .	10,086,000	8,952,000
1910 . . .	14,793,325	10,217,000

It was in the year 1903 that Germany passed Great Britain in the output.

It is always in periods of reaction and bad trade that the great improvements of productive methods are introduced and utilized, to counteract the adverse conditions, and this fully applies to the German iron industry. The industrialists ascribe their salvation to Bismarck's Protection, but it is more rational to account for it by the introduction of the Thomas method of steel-making. Sir Thomas Bessemer invented in 1855 the process which is named after him, for making steel of pig or soft iron, by the use of a so-called converter. After a few years experiments had made this method so perfect that it produced a complete revolution in steel-making, and it was introduced into Germany at the works of the Hoerder Verein already in 1864. But the Bessemer converter cannot, on account of its acid lining, be used for iron with a high percentage of phosphorus. While England had a good supply of phosphor-free iron ores, most of the German ores contained much phosphorus. To make Bessemer steel in Germany, English pig-iron or Spanish ores had to be imported. But in 1878 two Englishmen, Thomas and Gilchrist, invented a modification of the Bessemer converter, called the Thomas process, by which it became possible to use phosphorus iron in the process, and it is this circumstance which has enabled the Germans to increase their output at such an astonishing rate.

A French process, the open hearth, invented by Pierre Martin, and patented in 1858, first introduced at Sireuil in 1865, has also played a very important *rôle* in the development of the steel industry of Germany as of other countries.

From the Americans the German iron masters learned, and applied earlier than their English competitors, the modern enormous construction of their blast furnaces, which they have further increased, and of the great size of the works in all directions. They have also been very alert as to improvements of the mechanical appliances; and new inventions in this field, whether made in Germany or abroad, have at once been introduced. In consequence, it is a great pleasure and highly instructive to be allowed to visit some of their large modern metallurgical establishments, as for instance those of Gutehoffnungshütte in Oberhausen, or Krupp's in Essen. A visit

to the shop of such a machine-tool maker as Ernst Shies in Düsseldorf is a revelation. This firm commenced by imitating American constructions, but this stage has been left behind long ago, and machine tools of enormous size are now built to the firm's own designs.

Altogether, one might say that the national character has been changed since 1870. Instead of being in the highest degree careful, timid, and rather narrow-minded, the German business men, particularly in that great seat of the iron industry, Rhineland and Westfalen, have become quite American in their pushing enterprise and daring speculations.

It is not only in the allied trades of the iron industry that the German engineers excel. In nearly all branches of industry the German engineering firms have vastly improved the design and construction of machinery; it will be sufficient to instance the flour mill, the paper-making, the textile, or the brewing industries. In every country of the globe factories and works have been fitted up to an increasing extent with machinery and mechanical appliances from German engineering works. The explanation may be given by citing only one example, that of Deutsche Maschinenfabrik, Duisburg. Some years ago, in 1910, this firm, which produces as one of their specialities cranes of every description, employed 3,500 labourers and not less than 940 *Beamten*, mostly engineers. With such a relatively enormous staff of trained specialists it is no wonder that they can generally beat most of their competitors. This firm supplied the mammoth crane at the famous shipbuilding yard of Messrs. Harland & Wolff, Ltd., Belfast, which well illustrates their eminent position; and similar tales might be told, if space permitted, of a great number of other engineering firms in this and many other branches of industry. It is a triumph of superior technical knowledge, fructified by the banks placing sufficient capital at the disposal of enterprising firms.

The coal-tar dyeing trade is a typical example of how the Germans can adopt the ideas of others, and develop them beyond recognition by their scientific researches, plodding perseverance, and organizing talent.

In 1826, Anilin, an aromatic base ($C_6H_5NH_2$), was dis-

covered by dry distillation of Indigo. In 1834 a chemically identical substance was discovered in coal-tar which was called Kyanol, because it coloured chloride of lime violet. The English professor W. H. Perkin was the first who invented the artificial production from coal-tar with acid of chrome of blue colours which were called "anilin" colours. This happened in 1856, and gave rise to an industry on a small scale. In 1858 A. W. Hoffmann invented the common "Rosanilin," and in the same year Verguin invented the same colour which he called "Fuchsin." These sundry inventions gave the foundation for an industry which has since reached enormous dimensions. Alizarin, a very beautiful and stable colour, is the colouring element of the madder root, and Grabe and Liebermann and also Perkin determined its chemical character, which is closely akin to that of Anilin. They likewise invented methods for producing by synthesis from coal-tar a stuff which is chemically identical with Alizarin. This colour has since been produced by chemical methods, and the cultivation of the madder root has been discontinued; the cultivation of natural Indigo has likewise been much reduced.

To have identified the active colouring element of various vegetable colours with inorganic substances in a hitherto quite worthless bye-product, coal-tar, and the invention of constantly improved methods for the synthetical production of these costly colours, is one of the great triumphs of chemical science in the nineteenth century.

Anilin was invented by an Englishman, and the industry was originally started in England, but it was almost at the same time transplanted to Germany. Owing to the never interrupted systematic investigations of a numerous staff of highly trained chemists in the laboratories of the leading German dye firms, the coal-tar dye production has become almost exclusively a German industry. Nearly all the Anilin colours and seven-eighths of the Alizarin dyes which are used in the world are supplied by Germany. The annual value of the products of this German industry before the war amounted to many million marks—and it was one of the most important items in the export trade of the country. The organization of the leading German manufacturing firms in this industry is as near as possible to perfection. If anywhere,

these are the places where one meets at every turn *applied science*.

To have subjected electrical energy to the command of man is the greatest technical achievement of the nineteenth century, and our time might with good reason be called the age of electricity, just as the nineteenth century was called the age of steam. We owe this command over that mysterious power of nature to the steady evolution of the physical sciences, which has been going on during centuries, and which has progressed in the course of the last three generations with ever increasing rapidity; but there are still a great many questions in connexion with the laws that govern the electrical phenomena which are unsolved. A large body of men of the keenest intelligence and acumen, and with the highest scientific training, are constantly occupied in their study. About the year 1880 so many of the fundamental laws of electricity had, however, been discovered, that it became possible to begin to employ it in practical life for lighting purposes, for transmission of power, and in many other ways. By that time mankind had been so completely accustomed to technical thinking, that the problem of inventing the proper machinery and appliances for utilizing electrical power was taken in hand in the most matter-of-fact manner. People set to work to invent electrical machinery just as naturally as if they were going to build a house or buy a suit of clothes. This is precisely the kind of work for which the Germans are eminently fitted by their character and education, because success depends upon a combination of a solid theoretical training, systematic experiments, and untiring perseverance. They have actually made the electrical industry, hardly less than the colour industry, a German speciality. There are few branches of industry where there is, more than in the electrical manufacturing concerns, need for engineers who possess that kind of advanced scientific technical education which the German High Schools of Technology give their scholars.

But there is another circumstance in connexion with the general utilization of electricity which has also tended to the concentration of this industry in Germany. To use electricity it is in most cases necessary that the installations must be of a

fairly large size, which requires the employment of a correspondingly large amount of capital. Electric tramways, the lighting with electricity of a large area, electro-technic works, etc., all such and similar undertakings must be started on a fairly large scale if they are to be successful. Indeed, it has been found desirable and profitable to establish electrical concerns in many places where the inhabitants have not possessed the capital which was an indispensable condition. The large German electrical concerns, such as Allgemeine Elektrizitäts Gesellschaft A.E.G., Siemens Schuckert, and others, could not have reached so rapidly their present enormous dimensions if they had waited for their orders until the many future customers could have accumulated enough money to pay cash for the machinery which they required. To avoid this long delay, the electrical concerns made an alliance with the banks, and thereby obtained the funds by which to manufacture, so to speak, their customers. Either the electric companies established in their own name and for their own account electric tramways, power transmission companies, electro-technic works, etc. etc., or they secured through their banks the necessary credit for those who wished to buy machinery from them, but had not the means to do so. In this way the German banks have contributed a great deal to draw business in electrical machinery and appliances to their own country; and the electric machinery industry, by being thus concentrated in Germany, has to a certain extent been monopolized in the hands of a few German concerns. For their large turnover makes it easy for them to make costly experiments, and to introduce technical improvements in the manufacture to a greater extent than is possible for firms with a more restricted business.

But while this has been a well-deserved advantage for the German electrical firms and the banks who stand behind them, it must be remembered that the use of electricity in its many forms could not have been introduced into almost every part of the globe in such a short time if the Germans had not, in their own interests, pushed the business so energetically, and if the German banks had not been willing and able to supply a great part of the enormous amount of capital which this electrification of the industries has absorbed.

The world at large has therefore every reason to be thankful for what the Germans have achieved in this particular branch of industry.

Some years ago I visited the Technical School of Bradford, and was received by the master of the textile branch, Professor Alfred F. Barker. In the course of our conversation I remarked that, after all, the daily work in a factory cannot be done on the principle that applied science must be followed in every one of the many processes; it becomes a routine, and one has to use practical handbooks. "It is true," replied the Professor; "but one cannot reduce the textile industry to such an even course according to text-books as is possible, for instance, in the electrical trade. There is much more scope in the textile industry for acquired abilities or special gifts to assert themselves in the treatment of the raw materials, because both the materials and the objects of the processes vary so much." One of his colleagues, a professor of electricity at another technical school, had said to Professor Barker, after having visited his branch: "Your scholars, Professor, will be able to earn better salaries than the majority of mine, because there is so much more room for individuality in the work which they will have to do in practical life."

Shortly afterwards I went to Germany and saw many works and factories. I also paid a visit to a large calico-printing works. The chief partner took me round. We passed a room where some men were putting brands on grey cotton cloth. On my inquiring what they were doing, I was told that they were customs-house officers who branded the cloth for the sake of obtaining the drawback. "What," I exclaimed, "do you not print on German cloth?" "No," was the reply, "for our export goods we must buy Dutch or English grey cloth, because it cannot be made so cheaply in Germany."

Incidentally I draw the attention of the reader to the last reply, for it shows that the German consumers must pay more for their cotton goods than would be necessary if the protective duties were abolished. But I have placed these two anecdotes in juxtaposition because in my opinion they explain a great deal. One hears so much lately of how England is being beaten, industrially, by her junior rival Germany. But let us analyse

the figures of the exports from the two countries. In 1913, the last pre-war year, the aggregate value of the exports of British products amounted to £525,461,416; of this sum there fell on the exports of coal, iron, and other metals, raw or manufactured machinery, and ships, £182,713,324, or 34·7 per cent. of the total value of the exports; and on the exports of textile manufactures, £191,544,583, or 36·4 per cent. of the total value.

The corresponding figures for Germany in the same year were: The aggregate value of the export of German products was Mk.10,891,760,000; of this sum there fell on the export of coal, iron, and other metals, raw or manufactured, and machinery, Mk.3,149,200,000, or 29 per cent. of the value of the total export; on the export of textile manufactures, Mk.1,119,100,000, or 10·3 per cent. of the value of the total export.

This is a most remarkable contrast. It may be partially attributed to the evil influence of the Protective system in Germany. It is probable that the German textile industry is seriously handicapped by the heavy duties upon raw materials, and the many items of half-manufactured goods and accessories which enter into the textile manufactures. These duties add greatly to the cost of production, and probably cannot be fully met by a drawback when the finished article is exported.

The inability of the Rhineland cotton mills to produce as cheaply as their English and Dutch competitors was explained by the calico-printer whom I visited by the high level of wages current in the district, which he attributed to the rapid and great rise of the iron and steel industries. But this is evidently a wrong explanation.

In Lancashire, the greatest cotton manufacturing district of England, every variety of industry is represented—important coal mines, great iron works, chemical works, many large engineering works, paper mills, etc. etc. The cotton spinners and weavers would therefore not in the long run seek employment in the cotton mills at a lower rate of wages than they might obtain in the many other trades which are open to them. As a matter of fact, the wages in the Lancashire cotton industry are very good, and considerably higher than in Germany.

The explanation must therefore be sought in another direction,

and I am inclined to believe that the remark of the English teacher of electricity which I quoted above, hits the nail on the head. The textile production gives very great scope for the exercise of individual gifts and capacities, and the whole trend of the industrial evolution of England, and particularly of the Midlands, has developed in the industrial population, men as well as masters, strong personal character and great individuality. The English cotton mill operatives are much more efficient workers at the spinning machine or the loom than the Continental labourers of the same class, because they are reasoning beings with a very determined will of their own. It must not be overlooked that in Lancashire a young mill-hand knows that it depends upon himself whether he shall one day rise to be a mill manager or even the owner of a mill. The atmosphere of Lancashire is extremely democratic, and a works manager who attempted to bully the labourers, as is frequently done in Germany, would very soon find the place too hot for him.

The Lancashire cotton mills produce more cheaply than the German mills, not because they pay lower weekly wages—the very contrary is the case—but because they can use much faster-running machines than is practicable on the Continent with its less efficient labour, and because they have been able to specialize their production in the most remarkable degree. This specialization has been possible because in cotton goods, Lancashire, owing to Free Trade, has the entire world, including protected Germany, as its market.

The historic development of Germany has not been of a nature to strengthen either character or individuality; it has on the contrary tended to produce sameness. The nation is disciplined, but the barrack-room drill has set its marks very deeply upon this discipline. This drill cannot be, or at all events in Germany it is not, practised without much brutal maltreatment of the soldiers, not perhaps so much by the officers as by the drill sergeants. It must be the absence during centuries of political liberty, and in Prussia the military system with its brutalizing influences, which has produced among the Germans the prevalent and disgusting propensity of bullying. Even refined Germans consider it proper to maltreat those who are their inferiors in rank or business position, and the inferiors

accept meekly the abuses to which they are so frequently subjected, only they revenge themselves by dealing out the same measure to those who stand lower on the ladder of life than themselves.

This reference to the textile industries has been introduced because it is evident that their much-vaunted Protection has prevented the Germans from developing the textile industries to the same extent as, for instance, the iron industry, and to show the limitations of the German system. They have solved many important and difficult technical and financial problems, but not the greatest of all industrial problems, viz. the just management of labourers.

It is not an accident that the quasi-scientific Social Democracy of Marx is of German origin, and that the working population, almost to the last man and woman, have become his faithful disciples. Neither is it an accident that the political influence of the Social Democrats, in spite of their great number, has been almost nil.

Germany has, economically, progressed marvellously since 1871, but her industrial renaissance will not reach its full flower until it throws away the unjust customs-house protection, with its fetters, and before the nation gains, like her Western neighbours, full political liberty.

CHAPTER XII

THE WORLD ONE MARKET

IN a country which has attained a certain stage of economic development, and has obtained fairly well organized means of communication, the commodities which are produced in the country itself for home consumption will have a regular market value. This will oscillate about the cost of production of each commodity plus an average profit. Commodities which are regularly imported in large quantities to civilized countries will also command a fairly steady market value, regulated by the cost of importation.

Savage people, when left alone, likewise estimate pretty accurately, in dealings between themselves, the value of the products of their own soil and of the products of the primitive household industries.

But so long as the means of communication between distant countries still were of a primitive nature, this curious condition existed that there were at one and the same time quite different levels or standards of value in different parts of the world, and even in countries which were not very far distant from one another.

If there arrive, in a civilized and economically well-developed country, small and irregular supplies of strange exotic products, it will depend, not upon their cost and utility, but upon the strength of the demand which springs up for them, what price they will fetch. In primitive societies, the value of imported goods of an exceptional character is still more erratic. Experience has abundantly demonstrated that what we consider as almost worthless European products frequently appeal to the uneducated fancy of savage people to a degree which we cannot understand.

Apart from such extreme cases there were constantly local

inequalities in the prices of the commodities during the time before the means of communication had been improved. There would be a tendency to over-production with a correspondingly low price of that or those articles which could be most easily produced in each country or locality. The same articles might be scarce and dear in a neighbouring country or district, because the prevailing ignorance of the conditions of other markets, and the high cost of transport, prevented the free exchange of commodities. In Europe during the Middle Ages, a failure of the harvest might, and frequently did, cause local famines, because the abundance of other parts of the Continent could not be made available for relieving the distress; and until quite recent times there have frequently been serious famines in Russia, and the British administrators of India have not yet been able to prevent appalling local famines, resulting in the death from hunger of a terrible number of people.

From the very beginning of human civilization there is ample evidence of the fact that traders made use of the difference in the level of values in various countries to obtain a profit on their international commercial undertakings. Not only the ancient Babylonians, the Egyptians, the Phœnicians, and the Greeks, carried on international trade on an extensive scale, but the Romans followed in their footsteps, notwithstanding the military organization of their Empire. And it was largely this international trade which contributed to the wealth of these ancient States as well as to that of the Italian, and afterwards of the German cities of the Middle Ages. For the profit on this exchange of goods was reaped mainly by the active traders, who usually belonged to the highly organized States. No doubt this trade was also advantageous for the barbarians with whom the merchants of civilized countries had dealings. The many public markets played a very important rôle in the commerce of the ancients, because they helped to establish local current prices, which was a gain for the undeveloped peoples, protecting them against the worst forms of cheating on the part of the foreign dealers. But only these dealers knew exactly the difference in level of values between their own country and that of the country which surrounded each market. In the ancient empires, with their large proportion of slaves and great poverty among the masses, the inter-

national trade had for its principal object procuring of articles of luxury for the rich upper classes, and only to a minor extent cheap commodities for the daily consumption of the lower classes. It remained, therefore, within comparatively narrow limits, and the high cost of the trading expeditions tended greatly to restrict commerce in cheap goods.

After the discovery of the New World and the sea route to India, the countries in the West of Europe began to compete with the Italian cities for the Indian trade. It is, however, quite characteristic that the English called those people who first dispatched ships to trade with the oversea countries "Merchant Adventurers." It was indeed a risky undertaking. The ships of those days were badly constructed, and navigation was insecure; there were no charts of the high seas, no light-houses or pilot service; foreign countries were imperfectly known, and the inhabitants frequently hostile. Many of the expeditions probably never returned. But the profits might be enormous, and there was never any lack of daring men who faced all the dangers, risks, and inconveniences in the hope of gaining wealth.

Let us suppose that one of these adventurers arrived at a tropical coast where coconuts abounded. Among his stock-in-trade were also, let us suppose, glass beads which he had bought at home for a mere song, but which seemed wonderful things of beauty and joy to the primitive savages. For one such bead they gladly gave him perhaps 500 coconuts. On his return he offered his nuts for sale, and they were at that time still a great rarity in Europe; his stock was not so large that everybody could get a nut, and people willingly paid perhaps two glass beads, or their equivalent, for the possession of one coconut. If our suppositions cover what actually took place at the commencement of this oversea trade, it will be observed that the adventurer received the equivalent of 1,000 beads for what he had purchased with one bead only; in other words, he made a gross profit of not less than 100,000 per cent. on the transaction. But such an abnormal rate could only be obtained as long as beads in the tropics, and coconuts in Europe, were maintained at the level of scarcity value. If, having netted a great gain on a few coconuts, the adventurer would next time try to fill his vessel with them

at the same spot where he had bought the first, he would soon discover that the natives were no longer so eager for beads; he would have to pay them perhaps ten beads for 100 nuts; and the economically better educated public in Europe would certainly not buy shiploads of coconuts at ridiculous fancy prices. Let us suppose that the price went down to one bead, or its equivalent, for two coconuts, or 50 for 100. If so, the gross profit would be reduced to a miserable 400 per cent. instead of 100,000 per cent. When we remember that the ships were small, the voyages very long, the expenses very high, and the risk of losing the vessel great, it is within the bounds of possibility, it is even quite probable, that a full cargo of a cheap article like coconuts, when sold at a nominal profit of 400 per cent., resulted in an actual loss instead of a net profit on the whole voyage. I am here thinking of the early days of the trade between Europe and the oversea countries, and wish to draw attention to the fact that the enormous profit which was undoubtedly sometimes obtained on the tentative efforts which were made to create and develop this commerce, depended largely upon maintaining scarcity values. It is recorded of the Dutch, who for a long time had a monopoly of the spice trade with the Far East, that they sometimes burned part of the supplies, if too many spice vessels arrived simultaneously, rather than face a heavy drop in prices.

The difficulties attending the navigation of the long-distance voyages were in course of time gradually reduced, the construction of the vessels was improved, and their size enlarged; and instead of the haphazard voyages of isolated adventurers, the oversea business was by degrees more systematically organized. Large companies were started which established factories at suitable places in the oversea countries. European manufactures, particularly those of England, increased in importance. Instead of sending out quite worthless rubbish for the delectation of childish savages, a regular export trade gradually developed in cheap but useful products of the superior European industries, and the outgoing vessels brought home in exchange cargoes of what became in course of time known as Colonial produce—sugar, coffee, spices, raw materials, etc. The cost of transport for both voyages, out and homewards, was still high, and there was still a strong element of hazard in this branch

of trade which tended to maintain its level of profit considerably higher than usual in the home trade ; but, after all, the enormous difference in the level of values between Europe and the various oversea countries, which had originally existed, began slowly to be somewhat reduced.

The means of communication between Europe and the other continents had been much improved, and the oversea commerce had increased considerably before the commencement of the nineteenth century, but it was the advent of the modern industrial epoch in Europe, the introduction of steamships, the great progress in commercial ability, and the modern development of banking, which produced a revolution in the trade relations between the different continents. This change corresponds to the revolutionary change which has taken place within the industrialized countries since the introduction of power machinery. The high rate of capitalization in the industries, which makes it imperative for the manufacturers to obtain efficient labour, has compelled them to pay constantly higher wages. The modern commercial development of international trade has increased enormously the capital which is invested in it. This large capital cannot earn a sufficient yearly income on a few small transactions at a very high rate of profit. The size of the capital compels the traders to strive for a correspondingly large turnover, to obtain which they are obliged to do their business with a moderate margin of profit on each transaction. I believe I am right in stating that the very large firms who handle the international corn trade, work with an average profit of something like $2\frac{1}{2}$ per cent. or even less.

The rapid progress of international, and particularly of the oversea trade, is due to the rapid development of communications since the introduction of steamships. Regular lines run between Europe and America, and every port of any importance in the other continents, supplemented by a constantly increasing fleet of tramp steamers, and all the continents are connected by submarine telegraph cables, whilst since the establishment of the Postal Union the postal service has grown in a truly wonderful manner. During the last generation international banking has been developed most marvellously ;

without its aid, the trade between the different continents could not have grown so rapidly as has actually been the case.

But above all must be mentioned the enormous progress of the commercial ability, and the expansion of enterprise among the leading nations of the world which has taken place within our own time. The merchants have literally made of the entire globe one single market.

Before the present war broke out, London was the commercial Metropolis of the world. It was no longer a staple place in the old meaning of this word. For the goods which are not destined for consumption in England itself, are no longer shipped exclusively to London, but go mostly direct to the various consuming countries. But all oversea goods were sold on the basis of the price which might be obtained *c.i.f.* London with additions or deductions, according as the freight to the place of destination was [higher or lower than the rate to London, and London was the great financial clearing house of the world. It is not probable that the result of the war will be to shift the centre of international trade to any other city; but even if this should happen, it will not materially change the conditions under which international trade is carried on, for it will merely make the price in the new Metropolis instead of London the dominant factor in the regulation of the world price.

It would be impossible to overrate the service which the merchants have done for humanity by thus equalizing the prices current in every part of the world. They have entirely done away with the condition which still ruled until the beginning of the nineteenth century, that there co-existed in different countries different levels of value, to the great detriment of producers in undeveloped countries, and to all consumers. Nowadays, the producers of wheat for instance, in the United States, in Argentine, or India, obtain, when their land is connected by railways with shipping ports, the same London price for their produce as farmers in England, less the cost of transport and the moderate profit of the dealers and the international corn merchants. And conversely the output of all the wheat lands of the world is placed at the disposal of the consumers in all those countries which do not grow a

sufficient quantity of wheat for the sustenance of their inhabitants.

What applies to the importation of wheat and other oversea produce to Europe, that the price is regulated by the relation between the total supply and the total demand of the entire world instead of depending on local market conditions, also applies to the regulation of the price of the industrial products which are exported from Europe and the United States to the other continents. Numerous merchant firms in London, Hamburg, Antwerp, and other large cities, as well as in New York, have covered the surface of our globe with branch establishments for the import from and export to the other continents; and the numerous manufacturing firms daily offer their goods to these international houses, who thus get a reliable survey of the quantities which are on offer in the market. They are able to pit the one manufacturer against the other, and to buy those goods which are at the moment, in proportion to their quality, the cheapest. By the competition of the manufacturers and merchants, the buyers in the oversea markets are effectively protected against being over-charged, and the tendency of this gigantic commercial organization is to create a current world market price for all the commodities which are produced in big quantities, irrespective of their nature. The industrial output is increased from year to year. The merchants are able to find somewhere in the world an outlet for it all; but the very fact that the production grows leads to a constant cheapening of the industrial products, which cost in the oversea markets the manufacturers' prices plus cost of transport and the profit of the merchants.

The days when one might buy Colonial produce for small quantities of nearly worthless European rubbish are past, or at all events they are fast disappearing, for even savages in out-of-the-way places have been drawn into the ever-growing network of international trade, and have come within the calculations of the distributing merchants; and the savages have thereby been educated up to basing their standard of valuation approximately upon the European level.

Social Democracy is not a practicable form of economic organization within the borders of each country, being based upon a mistaken deduction from a wrong scientific theory.

But even if it had not been an Utopian dream, it could never be realized, because it would be totally unfit for solving the highly complex problem of the international distribution of the products of agriculture and industries in the innumerable countries of the world.

The man in a gold-diggers' camp who strikes a rich lode may become wealthy, while his fellows may be on the point of starvation, although they work very hard. Such difference of fortune is inseparable from human conditions. A people which has taken possession of a fertile country with an agreeable climate can live in comfort and luxury, while it is the lot of other nations to live in barren countries where the climate is severe, so that they manage to find a scant living only by an incessant struggle with an inhospitable nature. In past ages nothing which man might do could ameliorate the unfortunate condition of those who had got by an accident a poor country for their home, except migration to more fertile districts, which generally led to war with the previous inhabitants. The Migration of the Peoples in the first centuries of the Christian Era is an example, on a large scale, of such an attempt of the nations to better their lot. The great emigration from Europe to the United States and other oversea countries during the nineteenth century, is a parallel movement on a much more gigantic scale. But finally there will be no more room for wholesale migration, and the nations who are already in possession of the land will have grown strong enough to prevent newcomers from ousting them from it.

No human ingenuity can make a naturally barren country fertile. But there are few places inhabited by man which are so utterly devoid of natural resources that some kind or another of production cannot be carried on more or less successfully. The most important result of the conversion of the entire world into one single market has been that it has placed the possibility of concentrated production within the reach of almost any district of the globe. For when prices have been equalized, the cost of transport and commercial profits have been reduced, and the whole world is open to exchange goods with anybody who has anything to sell on good terms, a slight natural advantage may be sufficient to

secure for a particular district an extensive sale for the commodities which it can produce cheaper or better than others. If the inhabitants recognize this, and do not waste their energy on the production of things in which they cannot compete, but concentrate their efforts on the production of those commodities which are best suited to the natural conditions, they may thereby still further increase their superiority in that particular field of enterprise for which the district is naturally adapted.

It comes natural for a Norwegian in this connexion to point out the contrast between the North of Norway and the South of Italy. Although the northern part of Norway, from the Lofoten Islands northwards, does not suffer from such a very inclement climate as most foreigners are probably inclined to believe, and agriculture may be carried on with a fair amount of success, this part of Norway could not support its present population if the sea did not constitute their principal harvest field. Enormous shoals of codfish come there each winter to spawn, and the climate is unique in the facility it offers for the production of dried, unsalted codfish (stockfish). The inhabitants might neglect the fisheries for the improvement of their agriculture, they might even grow vines and orange trees in hot-houses. But they do nothing of the sort. Finding a constantly growing demand for their fish products, thanks to the steady improvement of international trade, they have several times increased, during the last fifty years, the size and efficiency of their fishing fleet. In South Italy dried codfish could not be produced, even if the fish could be caught, because the drying cannot be done except in a country with a winter temperature near the freezing point; but they can produce in abundance olive oil, wine, oranges, and other sub-tropical products; and exporting them to Norway and other countries, they buy for the money thus obtained the quantity of Norwegian dried codfish which they require.

On this exchange of commodities the inhabitants of the northern parts of Norway have become, during the last two or three generations, if not exactly wealthy, at all events economically prosperous, in spite of the fact that they form the most northerly outpost of the white race on the globe.

The progress of this part of the Norwegian nation, which has really been quite marvellous, is directly traceable to the beneficent influence of the growth of international trade; and similar things have occurred in most countries.

But in regard to the influence which international trade is destined to exercise upon the conditions of life in the various parts of the world, particularly upon the conditions of life in hitherto thinly populated countries on the outskirts of civilization, humanity still stands only at the earliest beginning of an evolution which will finally bring about the most remarkable changes. For hand in hand with international trade, the complete industrialization of the world will in the years to come do wonders for the transformation and equalization of human conditions.

In the early history of the English iron trade, when it was still dependent upon the use of charcoal, it continually shifted from one district to another as the supply of wood in one place after another gave out. A similar shifting also occurred, after coke had come into use for iron making, to localities where water power was available for producing the draught. And when steam power had been introduced, iron works sprang up in previously almost uninhabited districts, in such localities where coal and ores were found in juxtaposition. In recent years the iron industries of the United States and Germany have largely surpassed the output of the British iron industry, but the production of iron is still mostly concentrated in those localities which possess an abundance of coal suitable for the coking process. The iron ores are exported from many countries to the great iron-making centres. Quite recently the problem of smelting iron by electric energy has been taken up, and if this problem can be happily solved it is quite probable that iron will be produced close to the place where the iron deposits are situated, provided there are waterfalls in the neighbourhood for supplying cheap electricity. A quite new method of iron-making has just been invented by two young Norwegian engineers, Messrs. Westheim and Edwin, and the famous Swedish engineer, Dr. Gröndal; by this method the reduction of the ores is to be effected by electric heating into a burning oil gas; and if successful, this method will make it possible to use for the production of iron, or

rather steel, low grades of iron ore which it has not, until now, paid to utilize.

It is, in any case, only a question of time when the engineers will succeed in making iron profitably on any spot where ores are found in sufficient quantities and where cheap electricity is obtainable. When this has been achieved it will mean that the iron production will no longer be concentrated in a few places to the same preponderating extent as hitherto. The iron industry being the mother of a vast number of kindred industries, such a change as here indicated will bring about a general decentralization of the industries, and a large number of districts which to-day are only very thinly populated, will become populous and progressive communities.

This is only given as an example to show the direction in which it may be expected that future industrial development will in all probability move. Industrially undeveloped countries or districts will be taken in hand. Technical ideas are the common property of humanity, and wherever there is a district which from one cause or another offers special facilities for some kind of industrial production, it is sure to attract some day the attention of one of the numerous, ubiquitous, and watchful business men who look upon the entire world as their home. The business man, seeing a chance of making money, will engage trained engineers to develop the industrial possibilities, and after a few years a teeming population will fill the spot where previously perhaps only a few hunters could find a precarious living.

There is absolutely no limit to the aggregate resources of the entire world; from year to year new sources of raw materials will be discovered, and novel methods for utilizing them will be introduced, thanks to the alliance between merchants and engineers, which is daily becoming closer. The result of their combined efforts will be to raise continually the standard of life in all parts of the globe, and to add year by year to the area where populous communities may thrive and prosper.

Nothing can in the long run prevent those international tendencies which have been sketched above from exerting a constantly growing and beneficent influence upon the economic and cultural development of our race. In proportion as all

sections of humanity become more intimately connected in their economic relations, both commercial and industrial, the fear and jealousy of foreigners, which has until our own time characterized all nations, will gradually die out. Unfettered international trade will ultimately deliver mankind from the war spirit, that terrible and disgusting atavism.

But this evolution of our civilization towards universal peace and goodwill among the nations is still, unfortunately, to a large extent counteracted by a foolish and perverse institution which survives as an evil relic from the dark period at the beginning of the Modern Era. I am referring, of course, to the system of protective customs duties which still prevails in most countries.

This system has undergone several metamorphoses, which generally happens with institutions that continue during a protracted period. At the time when the national states of Europe were slowly evolved out of the anarchy of feudalism, our Continent had sunk down into a wretched condition of poverty and economic disorganization. Money was extremely scarce, and the lack of a good and sufficient currency was found to be one of the most serious obstacles to a rapid consolidation of the various countries in which the rulers tried, more or less successfully, to establish *a novo* an organized State authority.

The first thing which these rulers had to do was to find means for obtaining a revenue. Direct taxation could not yield much in the very primitive societies which at that time existed in all countries of Europe.

The Italian commercial cities were the first places in which capital again began to accumulate. Hardly anything impressed visitors to those cities from this side of the Alps more than their abundance of ready money, and it is not strange that they fell into the error of mistaking this sign of opulence for the substance itself. They were confirmed in this error by the circumstance that when the merchant bankers of Italy gave financial assistance to penurious princes, the loans were concluded in the terms of money transactions.

To crush the feudal vassals, the princes needed armies, guns, and ammunition, which required money; and to obtain sufficient cash revenues became the all-absorbing object of the policy of

the different monarchies. The commercial methods to which Italian cities owed their wealth were a riddle to the monarchs and their ministers, but they perceived that the progress of these cities was a result of their international trade. The princes were therefore anxious that their states should likewise engage in commerce, the more so as customs duties upon imported goods placed at their disposal an easy way of increasing their revenues.

As soon as trade began to play a somewhat important rôle in the countries of Western Europe, an attempt was made to comprehend the economic laws by which commerce is regulated. With the poor help which the writings of the scholastic philosophers could give, an ignorant age came to the conclusion that a country would become rich in proportion as it succeeded in drawing to itself large quantities of gold and silver; and trade made this possible. Mercantilism, which is the child of prejudices and misconceptions, could never grow into a real science, having too shaky a foundation; but from the fourteenth century the conception that poverty consists of lack of money, and that the wealth of a country depends upon its ability to command a plentiful supply of the precious metals, dominated more and more completely all countries of Europe. Colbert, who was the Minister of Louis XIV from 1661 to 1683, based upon the mercantile balance-of-trade theory his famous regulations, by which he made mercantilism a comprehensive administrative system. His aim was to restrict importation, increase exportation, and obtain cash from abroad for the balance. To stimulate industries within the country was one of the steps which he took for giving effect to this policy. The duty upon raw materials which they needed was reduced, and the export of such materials prohibited. Heavy duties were charged on imported manufactured articles, privileges were granted, and subsidies were paid to those people who were willing to start manufactures. This system was imitated in most countries.

In England, where the landowners were dominant, they used their influence to get laws enacted which aimed at regulating the corn prices in their favour by export subsidies when that suited them, and by import duties when they feared competition in the home markets.

The most absurd attempts were made to "regulate" the industries. The rate of wages was fixed by the State, which also decided in which localities each industry should be carried on. The manufacturing processes, too, were minutely prescribed. Both in France and in England the export of machinery was prohibited, and skilled artisans were forbidden to leave the country.

Short of trying to produce wine from hot-house grapes, there was hardly any absurdity, in the direction of starting industries for which their countries were not suited, which the different governments of Europe did not commit during the mercantile period. They all made more or less futile efforts to obtain colonies which they wanted to exploit, regardless of the interests of their inhabitants, for the benefit of the mother country.

Foreign countries were regarded as enemies; a trade which brought others any gain must be a loss to one's own country. Within the states the object of all the regulations was to bring revenue to the exchequer, and profit to the favoured few whom the State had granted privileges. Nobody cared for the consumers, and as to the majority of the inhabitants, the labourers and peasants, they had no voice in the matter; their duty was to obey and to labour—the lower their wages the better for the landowners and the manufacturers!

It was not before the commencement of the nineteenth century that mercantilism, as a financial and administrative system, was gradually abandoned in most countries, partly because it had been a practical and obvious failure, and partly because Adam Smith had laid the foundation of a real science of Political Economy which could teach humanity that it had been acting for centuries upon a colossal error.

International trade does not in the long run flourish unless it brings profit to all the nations who take part in it, and the gain of one country is not necessarily a loss to the other. On the contrary, if there is an active and progressive trade between two countries, and it is an ascertained fact that to one of them this trade is highly profitable, one is justified, without any further investigation, in drawing the conclusion that it is also very advantageous to the other party to the mutual exchange of commodities.

As to the balance-of-trade theory, it has already done more than sufficient mischief, so that it ought to be relegated to limbo, to be brought into light only when the past follies of mankind are to be recorded. If traders are left unfettered they make a profit on their transactions for themselves, and therefore also for their country, whether they import or export goods; and under the free play of trade these transactions are regularly liquidated by goods or services. The movement of prices automatically regulates the ratio *between* import and export. But, unfortunately, the ghost of the balance-of-trade theory still stalks about the world to haunt mankind, and, as Ibsen says, nobody can fully slay a dead man.

In the economic world, in the newspaper press, and in politics, the producer has still much more to say than the patient consumer, and particularly the producers on a grand scale, the manufacturers and the landowners, have to this day dominated politics in nearly every country of the world.

During the long period in which mercantilism reigned supreme in Europe, these classes, the great producers, got into the habit of obtaining advantages from their States in the shape of privileges, protective duties, subsidies, etc. The loss of all these advantages appeared to these privileged people insupportable. To avoid it they have up to now successfully made use of the circumstance that mankind generally retains a theory or conception, which has once been inculcated, a long time after its unsoundness has been abundantly demonstrated. To the vast majority of people it still seems perfectly self-evident that if a commodity is imported which might be produced in the country, it is a national loss, and a country which exports much more than it imports must get rich. Playing upon this popular ignorance, the producers have succeeded in most countries in convincing the working classes, that if only the industries, including agriculture, are sufficiently protected, the production will thereby be increased, and there will be a better demand for labour with higher wages. By the cunning use of the catch-phrase "protection for home labour," the producers have hitherto succeeded in ensnaring the working classes in all countries, with the exception of Great Britain and Ireland, and have obtained with their help high protective barriers.

It would not be possible to invent anything more absurd than Protection under modern conditions. Every effort is made to improve the means of communication : more railways are constructed ; new and better steamship lines are started ; the telegraph and postal services are constantly improved—all of which is done in order to facilitate trade and the free exchange of goods between all the nations of the earth. At the same time each country raises its customs duties higher and higher to “ protect native labour.” The merchants have succeeded to a most remarkable extent in making the entire world one market, but the selfish greed of the producers has prompted them to use their political influence to obtain barriers at the many frontiers, in order to stem the tide of the economic internationalization of the human race.

But the time will ultimately come when the consumers will rise to brush away this reactionary system. For while a few producers may gain by Protection, all the consumers have to pay for this folly of going counter to the irresistible rational tendency of our civilization.

Let us suppose that in one country A, a certain commodity may be manufactured and sold with an average profit at a price of 90, and that in another country B, it cannot, from one cause or another, be manufactured and sold at a lower price than 95, if the manufacturers are to obtain an average profit. If there is no customs duty in the country B, the commodity will of course be imported, but if a customs duty of 10 is imposed, the manufacturers in B will get the sales, provided they accept a price slightly below 100. The manufacturers obtain a profit of nearly 5 above the ordinary rate, but the consumers must pay an addition of 10 to the price, and there is nobody who gains the 5 which represent the extra cost of production in the country B. This is a dead loss to the community which must be paid for out of the proceeds of the entire productive activity of the country. It is a stock argument of the Protectionists that, when the duties have been in force for a certain time, the inland competition will be sufficient to prevent prices from advancing. It is true that in small countries Protection frequently stimulates the production much beyond the quantity which the home market can absorb ; and the producers, who cannot compete outside of their own protected

markets, are frequently compelled to sell at a price which does not leave them an average profit. But this price reduction cannot go far enough to eliminate the higher cost of production, and the only result of Protection is, therefore, that a part of the productive capital and labour of the country is employed in a wrong direction. If the protective duties are high enough, in a large country, to exclude foreign competition, and the production of the protected commodities goes beyond the needs of the home market, there will eventually be formed *Kartels*, as the Germans call them, or trusts, as in America, to regulate the prices in the inland market, and the balance of the production is exported at lower prices. The German consumers must pay for the dumping of German goods, of which so much has recently been written.

Either protective duties are superfluous, because the country can compete with certain commodities in the market of the world, or they are economically mischievous, for they lead to a production for which the protected country is not by its nature well suited; in any case, the system is worked at the expense of the consumers, and it is therefore not only economically unsound, but it is immoral, because it is intended for the benefit of the few at the expense of the many—of society as a whole.

Although this system prevails everywhere, the different countries export those commodities for the production of which they are specially suited, and buy in exchange other commodities which they cannot with advantage produce, in spite of the protection. The system therefore cannot entirely prevent individuals from pursuing their own economical interests, but it is a great check on the free exchange of commodities, and it prevents humanity from taking full advantage of the possibility, which the modern means of communication have placed at our disposal, of specializing in each locality in that kind of production for which it is by nature best fitted.

The Socialists would render our race an invaluable service indeed if they were able by their international connexions to convince the labourers in all countries that Protection is a wicked system, which contributes more than anything else to retard the emancipation of their class from the yoke of poverty.

International trade, which tends to convert the world into one market, is the most powerful influence for peace and goodwill among the nations, for it binds them closely together with strong ties of mutual economic interests, it promotes friendly intercourse and knowledge between the various countries, and thereby it dissipates the fear, jealousy, and hatred which have hitherto been in most countries the dominant feelings against "foreigners." We laugh contemptuously when we hear of the Chinese speaking of the "foreign devils," but even refined people in the most highly civilized countries generally look down upon other nations; and as for the uneducated multitude in Europe, they very often use exactly similar expressions to that of the Chinese. Free trade between all countries will gradually teach the various nations that the despised foreigners are made of pretty much the same stuff as themselves, and that they all may become good customers who ought to be treated with due courtesy. Protection acts quite the other way; by maintaining the fallacy that the loss of one nation may be the gain of another, it perpetuates bad blood between the different countries, and one day so much international hatred has accumulated that it leads to a war.

It is no exaggeration to say that the terrible war would never have broken out had not Bismarck in 1879 made Protection the corner-stone of his policy.

In no age have there been so many chances for clever young men to create for themselves a brilliant economic position. The entire world stands open for them, and they neither need rank nor wealth as a stepping-stone; the capital accumulations have become so great that those who are responsible for their management are constantly on the look-out for men who show that they possess ability, energy, and integrity. These young men are the pioneers who lead humanity through internationalization on its forward march to a higher plane of civilization. They may, and they often do, amass great wealth for themselves, but only by doing useful service; under modern conditions lasting wealth can only be gained by those who are able to contribute to make this globe of ours a better abode for the millions who people it, and who must still toil to get their daily bread.

The progress towards the goal of making the world one

single market has been rapid during the last hundred years, in spite of many hindrances, of which the Protective system is the worst. In the days to come the growing intelligence of our race will finally break down this inheritance from the dark period of ignorance and national prejudices, and when this has happened, progress will indeed become marvellous.

CHAPTER XIII

RENT RECONSIDERED

IN the year 1800 Europe had a population of about 190 millions. By the end of the century the number had increased to more than 400 millions, and to about 460 millions in 1914.

In previous centuries the population was almost stationary, or increased but slowly; it was not an infrequent occurrence that a town lost as much as one-fourth of its inhabitants in the course of a single year as the result of the plague or some other epidemic. Infant mortality was terribly high. Not before about 1870 did the mortality rate in Europe begin to sink rapidly after the introduction of hygienic reforms. The mortality in Europe was 31 per thousand in the period 1801 to 1850; 30·5, 1871-75; and 23·5, 1901-1905. The birth-rate remained almost stationary during the greater part of the nineteenth century, although varying much in the different countries; but the figures began to fall rapidly from 1890-1900, particularly in the West of Europe. The average number of births per 100 deaths for the whole of Europe in the period 1801-1850 was 124; for the period 1850-1900, 134; for 1881-1900, 141; and for 1901-1904, 154.

This great increase of the surplus of birth over the death-rate caused such a rapid increase of the population that our continent was not organized to absorb the whole, and from about 1830 there has been a continuously increasing stream of emigrants going from Europe to the other continents, principally to the United States of America, which had in 1800 a population of 5,308,000; this had grown to 97,000,000 in 1913, and 100,730,000 in 1915. The white population has also grown in Canada, the South American countries, and the Australian Commonwealth; and the total number of the white race may probably at present be estimated at something like 600 millions against less than 200 millions in 1800.

One of the most remarkable sociological phenomena is the voluntary restriction of the number of children which, having been practised for generations in France, has suddenly spread to all the countries in Western Europe, and is adopted not only by the upper classes, but equally by the working classes. It remains to be seen how this pernicious system will influence the future of our race, its proportionate expansion relatively to the other races, its morals, and its physical condition.

We shall here examine only some of the economic consequences which have been a result of the most remarkable increase of the numbers of the white race during the last hundred, and particularly during the last fifty years.

The increase itself, being due mainly to the wonderful improvement of the hygienic conditions, is a direct result of the rapid growth of the scientific knowledge and of the wealth of the white race, both of which may be, to a large extent, described as indirect consequences of the introduction of power machinery 150 to 160 years ago.

The industrialization of human labour, initiated by the English, has been carried to its present relative high degree of perfection by the white race as a whole. For the different nations into which the white race is divided have all contributed, although not all to the same extent, to the process by which the different technical ideas have been, from decade to decade, more completely developed. Hand in hand with the ever-growing utilization of technical knowledge and skill in the productive processes has proceeded the most remarkable progress of pure science. Rational knowledge, which has become the common inheritance of the white race, has placed it a very long way before all the other inhabitants of our globe, and has given it the command of the material resources of the world to an extent which would have seemed absolutely incredible and quite incomprehensible to the contemporaries of Napoleon.

The complete change in the economic conditions under which the white race lives has besides other far-reaching consequences exerted a most profound influence upon the rental value of land.

Land as such, apart from the fruits which nature provides spontaneously, does not yield any revenue, and has therefore no value whatever, before accumulated capital is applied for

its cultivation. As this capital when spent is irrevocably vested in the land, having been entirely consumed in the process, cultivation of the land would never have been commenced if those who had accumulated the necessary capital could not have been assured that they should reap the benefits, and the culture of our race must therefore have commenced from the time when our ancestors first conceived the idea of the right of the individual to possess as his property that particular part of the land which he cultivated by spending upon it his labour of to-day and his accumulated capital, the savings out of his previous productive labour. Conditions are the same at the present period as they were at the origin of our civilization. The Socialists maintain that while each individual may freely enjoy the fruits of his own labour, means of production, as they call them—that is to say, the land—should not be subject to private ownership, but should belong to society as a whole. But if this theory were ever to be realized, the consequence would be that nobody would any longer have any interest in accumulating capital for permanent investment, because no such investment can take place otherwise than by binding the capital indissolubly to the soil. When the land is cultivated, when the waterfall is harnessed, when a mine is sunk, or a mill is constructed, the previously accumulated consumable commodities, which are used for these purposes, disappear. Wealth in consumable form is converted into permanent capital, which may yield a sufficient return in conjunction with future productive labour, but which cannot be moved from the spot which has been altered by this application of capital. To say that each individual may enjoy the fruits of his labours, but to refuse at the same time to acknowledge private ownership in land, is therefore tantamount to forbidding the individual members of society to accumulate capital, for they cannot employ their accumulations unless they sink them, in one form or another, into the soil, which they will not do if by so doing they lose their savings.

In very primitive social conditions the ownership of the land was not individualized; the land was the common property of the tribe or the village. Such an organization existed in Germany until the fourteenth and fifteenth centuries, and it

still exists in large parts of Russia. But the result of this communal management by the *Mir* or village communities does not invite imitation, the average yield of wheat per acre in Russia being no more than a quarter, or eight bushels, against a yield approaching thirty-two bushels in England. But how can it be better when the lazy and improvident members of the *Mir* get the same return as the few who are exceptionally energetic and clever, and nobody gains anything by spending his labour and capital to improve permanently the soil? Mines, mills, railways, and other modern means of production must also, like agricultural land, be under the management of those who have invested their capital in these and similar improvements, and not under communal direction, if an adequate return is to be obtained.

When land has been properly cultivated by an appropriate application of capital, it will yield a return corresponding roughly to the average rate of profit in the society of a given time and locality. The profit on the capital investment will be larger if the soil is fertile by nature, than if it is barren, and as long as fertile land is to be had, the barren land will not be cultivated, for capital will not seek investment in it. But although land which has been cultivated may be sold and bought also under a primitive state of economic evolution, it is not the land, as such, for which a price is paid, but the owner is compensated for the capital which he has invested in it. The land as such will have no value, apart from the profit on the capital investment. There will be no ground-rent value before society has advanced sufficiently to make exchange of commodities and concentration of production possible.

As a matter of fact, land values in Europe remained very low and almost stationary during the long succession of centuries in which the economic development was very slow and the population hardly increased.

But from the time when the industrialization of the countries of Western Europe commenced to make rapid progress, a decided change took place with regard to the value of land; both agricultural land and building sites in the towns began to rise in value. In both cases this rise was a consequence of the increase of the population, and of its consuming power, which was a result of industrialization.

For centuries the aim of the British Parliament was to encourage agriculture, and in 1689 it was enacted that a bounty should be paid upon the export of corn when the price fell below 48s. per quarter. This arrangement was generally considered beneficial by keeping prices steady, and by thus encouraging the production of wheat. But after a succession of bad harvests, all previous Acts dealing with agriculture were repealed in 1791, and a new Act was passed. Its object was to keep the price between 46s. and 54s. per quarter. An export bounty of 5s. was paid if the price fell below 44s., a prohibitive duty was imposed on the import if the price kept below 50s., and only 6d. per quarter of imported wheat if the price went above 54s.

The continuous wars with Napoleon prevented for many years any considerable importation of corn to the United Kingdom, and the price of wheat ruled very high, culminating at 126s. 6d. in the terrible year of 1812. The high prices brought the farmers large incomes, and the landowners obtained very high rents.

When, in 1815, peace was in sight, the landowners feared that they would be ruined by a large importation from the Baltic and America, and Parliament passed an Act prohibiting the importation of wheat if the price did not advance above 80s. per quarter.

But the conditions had been entirely changed since 1689. The industrial population had grown so much that the normal food requirements of the nation could no longer be met by the inland production, and violent price fluctuations resulted from this selfish and foolish legislation. In January 1816 wheat was sold, in spite of the protection, as low as 52s. 6d.; as a consequence of a poor crop, particularly abroad, during the same year the price rose in June 1817 to 117s.

The Napoleonic wars had left the European countries saddled with a heavy debt, and there was a general stagnation to the end of the thirties, intensified in England by a severe commercial crisis in 1837.

The British working classes, which increased in numbers, were oppressed by the heavy customs duties upon every conceivable article which was imported or produced within the country, but particularly by the heavy duty upon corn and the

prohibition of imports, and the British Constitution was shaken to its very foundation by the furious agitation for the abolishment of the corn duties.

In 1846 Sir Robert Peel carried his famous Act, by which a temporary protective duty on wheat of 4*s.* per quarter should be imposed when the price was 50*s.* per quarter, and from February 1, 1849, a registration fee of only 1*s.* should be charged. This small impost was afterwards abolished. In the meantime the customs tariff had been simplified already in 1845, when not less than 430 articles of minor importance were struck out of the tariff.

Notwithstanding the radical change which had thus been made, wheat prices ruled in the following thirty-nine years high and fairly steady, although the importation from foreign countries, particularly from the Russian districts round the Black Sea, constantly increased to supply the growing needs of the rapidly increasing industrial population of Great Britain.

In Prussia, the Hohenzollerns based their economic policy upon mercantilistic theories, and Frederick the Great carried out this system with great consistency. He did his best to foster manufactures, but did not lose sight of the fact that his country was, after all, mainly an agricultural one. His great object was to take care that the consumers, among whom were his soldiers, should not be compelled to pay an excessive price. The export of corn was prohibited, except on special licences which he personally signed with due regard to the market conditions on each occasion. Importation was as a rule prohibited. If prices threatened to rise on account of a scarcity, he let the State magazines purchase corn, mostly at low prices, in Poland. Private speculation in corn was almost impossible, for the King could influence the prices. If they went below the point at which the landowners could produce at a profit, the State magazines went into the market and made large purchases which caused an advance. But if the prices rose so much that the labourers and soldiers could not afford it, corn from the State magazines was thrown on the market in sufficient quantities to cause a fall. In 1771-72, when there was a terrible famine in the neighbouring countries, owing to failure of the crops, prices in Prussia were kept

fairly moderate ; and when the price fell in the years 1777-80, as a consequence of very abundant harvests, so that farmers complained that the corn production did not pay them, heavy State purchases brought the price up to an average.

During the French occupation of Prussia, the high protective duties and the various prohibitions against the import of certain kinds of goods were discontinued by Napoleon. After peace had been concluded it appeared that the low tariffs which the French had imposed were sufficient for protecting the industries, and the attempts to have the old mercantile system reintroduced failed. The Customs Act of 1818 marked the change.

The Revolution and the Napoleonic Empire swept away in France, amongst many other things, also the mercantile system. But at the Restoration, Protection was reintroduced to satisfy the general reactionary tendencies which set in. Napoleon III altered entirely the economic policy of France, when he had been won by Richard Cobden to free trade principles ; and he concluded the commercial treaty with Great Britain and Ireland on January 23, 1860, which inaugurated a short period of relatively free and easy exchange of commodities between nearly all countries in the West of Europe. This happy period, however, came to an abrupt close in 1879, when Bismarck introduced his protective system, which was imitated in most countries.

During the second half of the nineteenth century the industrialization of the western parts of Europe began to develop with a constantly increasing rapidity, and about the same time the fetters which had previously hindered the corn trade were mostly sundered.

The demand for corn and other foodstuffs for the rapidly growing industrial population, and for raw materials for the ever-increasing industries, grew so much, however, that the industrial countries were quite unable to produce sufficient quantities for their needs. New sources of supply had to be constantly sought out ; and while the Baltic provinces of Russia had for a long time been the principal granary of Europe, the supplies from the provinces round the Black Sea began to play year by year a more important *rôle* in the import statistics of Great Britain and Ireland and the other industrial countries. The

increasing trade from the Black Sea led to improvements in the means of communication, and a consequent cheapening of the cost of transport. But this was not sufficient to bring about a fall in prices; the English so-called *Gazette* price of wheat remained in the thirty-nine years 1845-84 at an average of 50s. 6d. per quarter. In the meantime, the importation of wheat to the United Kingdom had grown immensely, not only in absolute figures, but also in proportion to the entire consumption of the country.

This price of 50s. 6d. per quarter was determined by the cost of transport on that part of the necessary supply which had to be drawn from the remotest sources, or from those places from which the cost of transport was highest. It left, therefore, a considerable extra profit to the English producers, and consequently wheat land in England itself acquired a high rental value, while the English farmers were induced to improve very considerably the cultivation of their land in order to gain an extra profit by their favourable situation in close proximity to the consuming markets. The British landlords could let their land at high rents, and the average yield of wheat per acre has increased in England very considerably.

A smaller, but still in the aggregate a very considerable, benefit accrued to all those countries which were in a position to take part in the export of cereals and other agricultural produce to the United Kingdom, and in turn to the other West of Europe countries as they became successively industrialized. There was a universal rise in the ground-rent value of agricultural land all over Europe, and the methods of cultivation were everywhere improved. By the growth of the railway net these benefits were distributed over a constantly increasing area. This corn trade was further stimulated as new centres of industrial activity sprang up in a number of countries, which tended to raise everywhere the price more and more to the level of the world price, as fixed on the London market.

Not only did the industrial population grow in numbers, but their opulence grew proportionately still more. The working classes were therefore able to buy more bread, and much more meat, butter, and other provisions than before. The land which was situated near to the towns was used to an increasing extent for the production of meat and dairy produce, while cereals

came more from the most distant countries or districts. This process spread prosperity in all the countries which were under its influence; the rental value of land rose, and the farmers made satisfactory profits. It is quite impossible to obtain statistics to show precisely how much each of the different countries and districts within the area of supply benefited. But referring to the analysis of rent in a previous chapter, I am convinced that the outlying districts benefited in the aggregate considerably more than the agricultural producers in the United Kingdom and in the other industrialized countries. This may be said with confidence, partly because the total agricultural area of the outlying districts was so much larger than that of the industrialized countries, and partly because many improvements in the means of communication were successively introduced by which the cost of transport was relatively much more reduced on long than on very short distances. People who are intimately acquainted with conditions in Russia will, I am quite confident, be able to confirm this statement. But owing to the wretched system of agriculture which still prevails in that naturally fertile country, the average yield per acre is still miserably small, and the rental value therefore also relatively low compared with the rent which prevailed in England at the close of that period which we have been reviewing. But a small rent on an enormous number of acres may become in the aggregate much more than a high rent of a comparatively small acreage.

For everybody connected with agriculture in Europe this period had thus been advantageous. Land had risen in value, apart altogether from the profit on the capital which was invested in its cultivation, and the business of farmers had upon the whole been profitable.

But in the year 1884 a complete change of these conditions occurred, for in that year the average *Gazette* price dropped from 45s. 1d. as it had been in 1882, and 41s. 7d. in 1883, to 35s. 8d., as a consequence of the immense quantities of wheat which had commenced to pour in from the United States of America; and as this importation, instead of falling off, increased from year to year, the world price of wheat settled down on a permanently much lower level than had previously ruled. Instead of rising, the rental value of agricultural land in Europe began to fall in the most alarming manner, and landowners and

farmers in Europe complained that they could no longer grow wheat with a profit.

This powerful competition from America had come about as a result of the daring enterprise of the railway promoters in the United States of America. Congress granted them as a subsidy enormous stretches of public land on both sides of the proposed railways, and the prospect of reaping, on this hitherto perfectly useless land, the gain of a rental value, by giving access to the shipping ports for its coming wheat harvests, was a sufficient inducement to these men to embark upon their gigantic undertakings.

That illogical prophet Henry George, and his blind disciples, have tried to convince the world that poverty is a direct consequence of the circumstance that land is subject to private ownership and in a progressive country commands an increasing rental value. Nothing could be further removed from the truth. The rental value of land is the direct result of exchange of commodities, and it grows just in proportion as the circle of commerce of a given centre of concentrated production increases. The rent is not the cause of, but a result from the increasing price which must be paid to obtain supplies from distant parts, and the very fact that this unearned increment may be obtained is the most powerful stimulus both to an improvement of the agricultural production in the neighbourhood of that centre, and to making efforts for cheapening the cost of transport in order to draw new districts within the circle of commerce. The result of these two tendencies in combination is to increase the supply of the produce for the population of the centre, and thus to prevent the prices from becoming excessive; and the cheapening of the cost of transport over long distances, while it checks the rise of the ground rent near the centre or even causes it to fall, enhances the rental value of the immense acreage near the circumference with an amount that many times exceeds the loss of rental value in the small area near the centre.

Experience has abundantly demonstrated the soundness of the judgment of the American railway pioneers. The railway companies have long ago disposed of the land which was granted to them, on such terms that they have been thereby financially consolidated, and the farmers who bought it have become, probably, the most prosperous agricultural community that

human history can record. At the very outset they rushed into this business of converting the virgin prairies into immense wheat fields with such energy that their very success threatened to frustrate their speculation, for so enormous were the quantities which they were able to ship to Europe that they entirely knocked the bottom out of the market. But at this crisis they were saved by their own ability to industrialize the wheat production and thereby reduce the cost of production, and by the very substantial reduction of the cost of transport which the railway companies were compelled by the necessity of the case to effect. The immensity of the quantities that had to be shipped across the Atlantic produced likewise a heavy reduction in the cost of ocean transport. The result of all these factors has been that the land of the prairies to-day represents an enormous aggregate rental value, and that the wheat production yields a fine profit on the capital invested in the cultivation over and above the rent.

So far from this unearned increment having contributed to the poverty of the European consumers, the fact that it allured keen business men with the command of sufficient capital to create the means of cultivation of the prairies has saved them from paying exorbitant prices for their supply of wheat.

It may sound a paradox, but it is an incontrovertible fact that nobody pays for the increasing rental value of land, although the owners reap it, because the possibility of obtaining it is such a powerful stimulus that it is sufficient to increase the supplies to the necessary extent. Rent is therefore an automatically acting protection for the consumers.

Indeed, it does more. The wealth which is distributed through the rising rental value of agricultural land among thousands or millions of farmers, acts upon the whole society as a great reservoir of economic strength. In proportion as the cultivators of the soil prosper, they become better customers for the products of the industries, which are placed by the growing sales to the farmers in a position to increase more and more their efficiency.

The perfectly astonishing economic evolution of the United States of America in the course of the last thirty years is a result of the constant action and reaction between its agricultural and industrial sections. So rapid has the industrialization of this remarkable society been that the exports from the States

of agricultural produce are already fast declining, and one may predict with considerable exactitude the day when the States will cease to be exporters of foodstuffs. They have, indeed, already commenced to import chilled meat, hides, wool, etc., from South America, and the fear of the agricultural population of Europe that they would be completely ruined by the competition from the States may therefore be allayed.

But the *rôle* as the wheat-provider of Europe which the United States of North America have played during the last twenty-five to thirty years, and are now on the point of relinquishing, has already been taken up successfully by Canada, by Argentine, by India, and other countries. The time is fortunately still very distant when the prospect of giving a rental value to land will not be sufficiently powerful inducement to bring new lands within the circle of commerce of the industrialized countries for supplying them with the food which they require.

As an instance of what wide scope there is for making a profit by taking up land in undeveloped or only partially developed countries, I may relate a case which has just come under my notice. An estancia, comprising 77,000 hectares of land situated in the northern part of Argentine, has recently been offered for sale for about Kr.650,000. It contains about 20,000 hectares of grass land, which may feed probably at least 200,000 head of cattle; it contains also valuable quebracha and other forests, and there is petroleum. To develop such a property will require several millions of kroner in capital. But when it is stated that small Norwegian farms are daily changing hands at prices ranging between Kr.1,000 and Kr.1,500 per hectare, it will be seen what an enormous possibility of gain there is in such an extensive Argentine property. The "unearned increment" which will accrue to those who are venture-some enough to sink their capital in developing new sources of supply for the industrialized countries is a guarantee that they are not likely to starve in the immediate future.

The fear which was entertained that this competition from countries in the other continents would ruin agriculture in Europe was, however, greatly exaggerated. Not only are the United States of America beginning to consume at home their enormous production of foodstuffs, but corn prices have in the last few years shown a slightly advancing tendency. Yet even

if prices are to remain permanently on a considerably lower level than before 1884, this does not mean that wheat may no longer be grown profitably in Europe. It would, indeed, be very strange if the cost of production should be found to be higher under an intensive system of agriculture than under exhaustive farming as practised on the American prairies. But if the price is permanently lowered, partially as a result of a considerable cheapening of the cost of transport on long distances, land in Europe will lose part or the whole of the advantage which its situation close to the consuming centres had previously given it, and it was this advantage which gave it a rental value. If these altered conditions become permanent the rental value of agricultural land in Europe will sink or disappear altogether. This will be a serious loss to the present owners of the land, and it will tend to diminish for a time the economic prosperity among the agricultural classes of Europe, but it will not affect the profitableness of farming or the rate of profit on the capital which has actually been invested in the land for its cultivation; the unearned increment will disappear, and also the capital which has been paid for the rental value. During the period of disorganization the landowners will be impoverished, but afterwards agriculture will again flourish. The great increase in the number of local centres of industrial production will to a great extent alleviate for the landowners of Europe the evil effects of the competition from oversea countries, because it will make intensive cultivation, and the production of provisions, dairy and garden produce, profitable. Denmark has given the world at large an example on a grand scale of what intelligent farmers may achieve when they apply in their daily work the teachings of advanced science. The changes of market conditions, which influence in one direction or another the rental value of agricultural land, are, however, likely to be more frequent and rapid than they used to be; it will therefore be necessary for farmers in all countries of Europe to imitate the example of the Danes, and learn to adapt themselves better than previously to the ever-changing conditions. To try to counteract the effects of the oversea competition on the sinking rental value of land in Europe, which previously existing conditions had given it, by imposing high customs duties on agricultural produce is sheer madness, for this value has

entirely or partially disappeared by the altered economic conditions. To prop it up by customs duties is therefore to deprive the industrial part of the population from reaping, in the shape of lower prices for their foodstuffs, the benefit which the technical improvements should bring them. The site value of agricultural land having to a great extent disappeared, the other classes are to be fined for the sake of maintaining it fictitiously. If land values in Europe are allowed to find their rational level, the land will not go out of cultivation, but it will have to be sold at a price which will permit the cultivator to obtain an average profit on the lower capital which is, under such conditions, actually needed for the cultivation.

The sooner this reorganization process is allowed to take its own course without State interference, the sooner will agriculture in Europe again become prosperous, but such great economic operations are never agreeable for those who have to undergo them.

Land which is equally indispensable for industrial production and for the housing of the town population as for agricultural production, had no rental value before man commenced his productive activity upon the soil, and for a very long time afterwards. Value is not a natural property of the land, but a relation which is entirely due to human economic activity. The cost of labour has at all times and everywhere tended to equality, although daily wages have always differed greatly. The profit on capital also tends to equality according to the stage of capitalization. The profit of capital per unit of the product falls with each successive step of technical progress; and the profit, reckoned at the rate on the capital per annum, falls still more, because the rate of capitalization increases more rapidly than production. But the sum of annual profit increases with the growing rate of capitalization.

When man first began to use the earth for his productive purposes, the land stretched in all directions unoccupied, and humanity, increasing in numbers, took possession of one part of it after the other as required. During a very long period productive methods were only slowly developed, and almost identical economic conditions prevailed everywhere, with nearly the same low rate of daily wages, and a fairly equal and high rate of profit. There could not under such conditions be much

trade between distant countries or districts, and a plot of land of a certain size would be equally useful for productive purposes whether situated in one district or country or another. Fertile land, or land which was more easily cultivated, would by preference attract capital, irrespective of its geographical situation, and it would be worth more than poor land because it yielded a greater quantity of produce and therefore a higher rate of profit on the capital investment. But the land in general could not attain a rental value, because its situation did not matter.

After a while the productive methods would be more rapidly improved in some countries or districts than in others, and the same causes which made industrial progress possible would also lead to a more rapid accumulation of wealth. The localities which were economically progressive, either by the favours of nature or by the aptitude of their inhabitants, would at a certain stage of evolution become centres of exchange for the surrounding agricultural districts, selling them their cheapened commodities and taking their produce in exchange; and when this process commenced, the economic conditions which were previously uniform began to be differentiated.

The exchange of commodities which is the result of economic differentiation, cannot extend over a greater area of the land than to the point at which the expense of transporting the goods just balances that cheapening of the production which gave rise to an exchange. If labour and capital spent on the production of agricultural produce to be sent to a central market, obtained less in exchange for them than could be produced at home with the same labour and capital under primitive methods of production, the inhabitants of the place are outside the circle of exchange of that market. They will continue to produce as before for the satisfaction of their own needs; the rate of wages and of profit will remain the same as before, and their land will have no rental or site value. But the produce of agricultural land near the central market will obtain the same price as the produce which is sent from the periphery of the circle of commerce, and this land will therefore command a site value, as explained in a previous chapter.

We have seen that the agricultural land round a centre of exchange may be conceived as a number of concentric belts, in which the rental value per acre is highest in the inner belt,

smallest in the outer belt ; but owing to the increase of the area as the square of the radius, the aggregate rental value is greatest in the middle belt and is actually in the aggregate higher in the outer belt than in the central belt. The site value of agricultural land depends on the cost of transport, and varies with variations in this cost, which are frequently greater on long than on short distances.

The same causes which make a town into a centre of exchange in a more or less extensive circle of commerce, and which tend to give site or rental value to the agricultural land which surrounds it, also act within the town itself, and give site value to the building ground according to identical laws. In order to understand how these act it is necessary to bear in mind that just as there is an average rate of wages and of profit current in the agricultural area which is comprised within the commercial circle of the town, so there will be established another and different current rate within the town from the moment that its productive methods have been differentiated from those of the surrounding country. The cost of labour will be the same, but owing to greater efficiency, due to division of labour, daily wages will be higher. The rate of profit will be smaller owing to the higher rate of capitalization, but the annual sum of profit will be greater. The new standard, whatever it may be, will dominate the economic evolution of the town.

When the town grows in population because its trade increases, not all the inhabitants can be housed in the immediate neighbourhood of the market-place, neither will there be room for all the factories in the centre, if they increase greatly in number. The raw materials for the industries, and the food of the people, must therefore be transported from the centre to where the factories and dwelling-houses are situated. This means an expense as well as the locomotion of the persons. As there cannot in one market be more than one current price, wages must be advanced so much that it covers the trouble of walking for those labourers who have the longest distance to walk from their place of abode to their place of work. This rise of wages is in addition to the cost of production, for the labourers must be paid both for the productive work which they actually do, and for the unproductive labour of walking. The cost of production is likewise increased by the cost of transport of the raw materials to, and

the finished products from, the most distant factories. All the goods being sold on the market-place, they must all command the same enhanced price. If the buyers within the circle of commerce are willing or able to pay this addition, it does not matter, but it will tend to reduce the area within which the goods can be sold by diminishing the gain on the exchange. If the price of the commodities cannot be advanced, the profit on the capital which has been invested in the industries and commerce of the town will sink below the average. This will tend to check the further growth of the town unless new improvements of the productive methods again make progress possible.

The number of the population of a town, and its area, are therefore determined by the average rate of profit; they stop when the town becomes so large that the gain of exchanging its goods with the surrounding country is more than balanced by the increased cost of locomotion within the town itself.

After the downfall of the Roman Empire it took more than a thousand years before any of the towns of Europe again reached to a great size. During the Middle Ages and the first centuries of the Modern Era, most of them were quite unimportant, and the number of towns was small. It was not before the nineteenth century that the world again saw such populous cities as Rome and other cities of antiquity.

Until the beginning of the age of machinery the European towns had not been so completely differentiated from the open country, and they had not been able to improve their methods of production so much that they could find an extensive market for their commodities in a very wide circle of commerce, and the means of land communication remained during nearly fifteen hundred years far inferior to those which had existed within the Roman Empire. How could industries and commerce develop rapidly under such unfavourable conditions? As a consequence of the stagnation of the trade of the towns, neither the number of their inhabitants nor their areas grew much. Many famous towns retained their boundaries almost unchanged from century to century. The result was that in these small towns, which hardly showed any sign of progress, the value of building and manufacturing sites remained low and almost stationary during very long periods.

The advent of modern industrialization changed the economic condition of the towns, just as everything else in human life.

The industries became concentrated as they had never been before, in the previously existing towns or in the new towns which sprang up round the many new great industrial establishments which were founded in country districts ; and the rapid improvement of the means of communication constantly drew new countries or districts within their ever-extending circles of commerce.

In England, which was the first country to become industrialized, the immediate result was that the insufficient house accommodation in the immediate neighbourhood of the industrial establishments became overcrowded to a fearful extent by the rapidly-increasing number of the working classes, who could not manage to live more than a very short distance away from their place of work, having to begin work very early and finishing very late at night. For house-room which was in the highest degree unhealthy, they were compelled to pay an excessive rent. From the causes which have been explained in a previous chapter, they did not at the beginning of the industrial era obtain adequate daily wages, while everything they required to eat or use was overtaxed. They suffered greatly, but the owners of house property in the workmen's quarters derived a large income therefrom. The well-to-do classes began at that time to move out of the central parts of the towns to villas in the residential parts of the suburbs, which grew up outside the old boundaries ; but many of which have since been changed into homes for people of modest means.

Similar developments took place on the Continent as soon as the different countries began to imitate the example of England. The only difference was that in the many Continental towns which had been fortified, the time-honoured city walls, with their moats and ramparts, mostly disappeared, or were converted into parks and pleasure gardens.

Rent in the central parts grew more and more, but no relief was possible from a highly unsatisfactory state of things as long as no radical change took place in regard to urban means of locomotion. It required a remarkably long time before it was generally recognized that urban means of locomotion might be modernized, just as well as the means of long-distance

communication, by the application of modern technical principles. In many instances the seeming conflict of interest of the different municipalities stood in the way of progress in this field. For if the means of locomotion were improved, it might be anticipated that many of the townspeople would settle outside its boundaries, and thus be lost as tax-payers.

The growing rental value of land did, however, at last bring the congested towns, which seemed on the point of being throttled by their own progress, the much-needed relief. Modern means of locomotion were at last introduced in order to open agricultural or market garden land in the vicinity of the towns for building purposes. First omnibuses, then tramcars were started on the roads leading out into the fields, and finally railways were constructed for the accommodation of urban passenger traffic. No sooner had this been done than workmen's cottages, or large tenement houses for the working classes, sprang up on land which had until quite recently been used only for agricultural purposes or as market gardens.

How far out the working classes could under these new conditions move was determined by the expense and time of the journey. So far and no farther could the town extend as the cost of locomotion did not become an excessive addition to the cost of labour. This limit of extension was constantly pushed farther away from the central parts of the towns, because the business of transporting the many labourers to and from their place of work grew in the large towns into enormous undertakings in which competition compelled those who had invested their capital in it to be always on the lookout for improvements of their service, in order to enable them to transport more passengers more cheaply and quickly. Some twenty-five years ago I looked carefully over a map of London: within a radius of twelve miles from Charing Cross there was hardly a single spot which was farther away from the nearest railway station than one mile and a half. The whole of this enormous area of about 900 square kilometres could therefore be considered as accessible for residential purposes. The population was at that time less than four millions, and on each square kilometre within this distance from town there were, on an average, a population of 4,400.

At that time Christiania had a population of not more than about 150,000, and the residential area of the town was not more than 16 km.², being restricted by the absence of tramcars running out into the country. In Christiania the population was consequently nearly 10,000 per km.² This is only given as an illustration, for of course neither in London nor in Christiania could all the land conveniently be used for the housing of the working classes, but it shows the tendency of improved means of locomotion to throw open more and more of the surrounding land to meet the needs of a growing town population.

The cost of locomotion within a town area cannot be measured exactly, as is possible with regard to the cost of marketing the agricultural produce of an acre of land. Neither is it possible to fix the number of people who may be housed on a given area of a town site. But with a given system of house-building, a certain number may be decently housed, whether the building is situated in the centre of the town or on its outskirts. The cost of, or at all events the time needed for journeying to and from the place of work increases with the distance. Taking this cost into consideration, a relatively high rent for a room near the centre, or a low rent in the suburbs, comes to the same thing, economically, for the working man. This difference in the rental of each room, multiplied by the number of rooms in the house, deducting the interest on the capital spent in building it, constitutes the site value of the plot upon which a house in the central part of the town has been built, compared with the same area on the outskirts of the town.

The town may therefore be considered, like the agricultural land within its circle of commerce, as composed of a number of tiny belts stretching from the centre outwards. The site or rental value will sink the farther away one goes from the centre, until a distance is reached where it does not yet pay to use the land for house-building, and where it therefore still remains at the level of agricultural value.

A long time before the point has been reached when a large progressive town ceases to expand, the value of land in the central parts will, however, have reached such a height that either the owners will have found it profitable to spend a large capital for increasing its usefulness, or they will dispose of it

at a certain number of years' purchase of the rent to others who are willing to invest their capital in this undertaking. The existing small houses will be pulled down, being very properly looked upon as nothing but old bricks, and large houses will be erected in their place. This is an economic development analogous to the more intensive cultivation of the agricultural land near a centre of exchange, in order to obtain the full advantage of its favourable situation. The skyscrapers of New York are the best known and most striking example of this tendency. That vast city would long ago have outgrown all its office accommodation if the narrow strip of its business part had not been thus increased manifold by carrying the buildings upwards to thirty or forty stories. In one of these skyscrapers it is said that as many as 10,000 people do their daily work. Even then office rent is high enough in the American Metropolis, but the business of this mighty city would have come to a standstill if the business quarter had had to be extended sufficiently without thus going up into the air.

The housing of the labouring poor, as Adam Smith would have said,—or of the millions of town labourers and clerks, as I prefer to call them,—without whose help the industrial work of to-day could not be carried on, has been very considerably improved during the last thirty years. But our age is still very far from having completely and satisfactorily solved all the problems which are connected with this question.

A few manufacturing firms in England and elsewhere have laid out what are called garden cities for their employees. In Norway a State-guaranteed bank has been established for giving mortgage loans on easy terms to labourers who wish to acquire their own cottage with a plot of land. These are tentative efforts in the right direction. No matter how many inhabitants a city may have, there is land enough in the open country around it to secure for each family their own cottage with a garden. The problem is, how to place the working classes and the clerks, who have to live upon a moderate salary, upon this land.

The essential condition is to improve the means of urban locomotion so much that the area which is thereby opened for building purposes becomes so large that competition compels

the owners to sell it at a very moderate advance upon the agricultural value. To increase to a sufficient extent the area which is available for building purposes has the same effect upon the ground-rent value of town sites as the opening of the American prairies had upon wheat prices.

When this has been done, and private enterprise, the municipality, or the State, has placed sufficient capital for mortgages at the disposal of the people who wish to build homes for themselves out in the fields, it will be the duty of the majority of the town population, the labourers and the clerks, to avail themselves of the favourable opportunities which are thus placed within their reach. The middle classes, who have taken the lead in the marvellous economic development of the last hundred years, have been obliged to help themselves by their energy and thriftiness. It is not otherwise for the labourers; they must also work out their salvation by their own efforts. If they are determined to become thrifty they have the possibility of saving enough to become owners of their own cottage with a plot of garden. Nothing could contribute more to the moral and intellectual progress of the working classes than if it became the universal rule that each family should live in a house which was their property, the fruits of their savings. Their interested work in the fresh air of the garden, assisted by their children, would be a healthy counterpoise to the monotonous and onesided work which is the lot of most of them in highly specialized modern industries and businesses. If the labourer is to derive real pleasure from the possession of his cottage and garden, short hours of work are a necessary condition. The familiar cry of eight hours' work and eight hours' play will have no real meaning and no economic justification before it becomes the rule that the people who leave the works and shops early have their own homes in which to spend their leisure hours. But short hours of work will mean a considerable addition to the cost of labour, unless the working classes are willing to do their work with greater energy. They must renounce the "ca'canny" or sabotage policy which they are still foolishly following, in the mistaken belief that when shirking their duty they only rob their employers. In reality they punish themselves, for their wages do not rise as they might otherwise do, and the cost of production is increased,

which falls most heavily upon themselves, who form the vast majority of the consumers.

Sensational prices are sometimes paid for exceptionally well situated sites in big towns. But for an office, a shop, or a works, hardly any price which is ever paid is too high when the situation is such that the daily recurring expenses and loss of time which result from a less advantageous situation can be obviated, and this gain is properly considered. When people begin to pay close attention to these things, and act upon rational principles, it is to be anticipated that in old towns, which have grown up haphazard, the offices, shops, and works will gradually be concentrated much more than is generally the case in the central parts, which are still to a large extent used for the housing of the working classes. There will thus be a double movement: the people will be housed in the new suburbs in healthy surroundings, where the children may live a happier life near the open fields, and the different branches of the business of the towns will be much more concentrated in the central parts.

The rental value of town sites cannot go so high as to cause the poverty of the masses, as Henry George has foolishly tried to make out. When the rent advances so much that it causes the cost of production to rise to the point where profit on capital begins to sink below the average, the growth of the town stops automatically. When the rent question is left to regulate itself under the free play of powerful modern economic factors, the advancing rental value of town sites will not be the cause of poverty, but it will act as the most efficient town regulator, and under its influence the entire area of the town will be utilized in the most rational and economically most advantageous manner. It will drive the business to the centre, and the living houses towards the periphery of the town; and if the majority of the people own the houses in which they live, the increasing rental value will make this investment better than any savings bank in which they might put their money.

CHAPTER XIV

THE GREATEST OF ALL INDUSTRIAL PROBLEMS : THE MANAGEMENT OF LABOUR

LONG after man had learnt to build boats, their steering as well as the propelling was done by the help of oars. When that way of steering became at last too cumbersome, owing to the increased size of the boats, a special steering oar was fastened with ropes to the right-hand board of the vessel, which is therefore still called starboard. A rudder fixed to the stern-piece and managed by a tiller, is a comparatively recent invention. The wheel which again considerably reduced the sum of human muscular energy that is needed for steering a vessel, is a still more recent invention. Notwithstanding the help of a wheel, it was not practicable to steer by hand vessels of the great size which is now common, and the steam steering gear was invented.

This example is a good illustration of the trend of technical evolution in its relation to labour. A sailor at the helm of a modern large steamer, which is fitted with steam steering gear, need not use his muscles much. But if his labour is to be efficient he must, however, use his brains. Close attention to the orders of the captain and a careful watch on the movements of the vessel are required to keep the course properly. The steam steering gear is an extreme example of how labour may be saved, for in this case it has almost ceased to be "muscular." What is required of the man at the helm is hardly anything but a "nervous" exertion.

Different branches of production present an infinite variety in regard to the extent to which industrialization of the work has been carried. But in many branches of manufacturing industries, and still more in agricultural production, much human energy must still be employed "to put objects in the

right position." If we use the expression, *degree of effectivity*, to denote the stage of evolution to which the productive methods in various branches have attained in order to distinguish this category from *the rate of efficiency* of the labourers who are employed, it will be observed that the quantity of the production will be a function of the degree of effectivity of the method, and of the rate of efficiency of the labourers.

Of the two factors which thus determine the quantitative result of productive operations, the effectivity of method has, until quite recently, attracted the attention and study of those who manage labourers much more than the efficiency of labour. The consequence has been that while there has been in the aggregate a great and rapid increase of the effectivity of methods, with a correspondingly large saving of labour, and consequently also of the cost of production, there is still an appalling waste of labour in the aggregate productive activity of humanity, because the rate of efficiency of labour remains lamentably low when the daily labour of the whole of humanity is considered.

There is, however, one kind of labour which has nearly always been done at a fairly high rate of efficiency, and of which the efficiency has risen during the last generation in the most remarkable manner. I am here alluding to the labour of sport. People are not, it is true, in the habit of classifying the exertions of sportsmen as labour. But inasmuch as almost all kinds of sport consist in motions, most of which are produced by human muscular energy, it is perfectly justifiable to consider achievements of sport from one point of view as labour. And, indeed, the people of the East, who do not submit themselves to any muscular exertions if they can help it, consider the ubiquitous Englishmen who spend their spare time in hard sports as madmen, who should rather order their paid servants to do this labour for them.

Sportsmen must not only train their body to make it stronger and more fit for the exertions of each game; but if they are to reach perfection they must also learn to make every movement of their body the subject of a close study, in order to find out how to gain a maximum of result with a minimum of exertion. In those countries where games of sport have been

highly developed, particularly in England, young men whose ambition it is to excel in sports are not content with practising by themselves, but they place themselves in the hands of experienced trainers whose duty it is to watch closely their exercises and to point out to them any faults or mistakes in the use of their body, members, or muscles. When sports are carried on, not by isolated individuals, but by a number of men who act together, a leader is elected whose task it is to allot to each member of the team, according to his special fitness, the various duties of the game. But this is not enough ; in a game of football, for instance, the captain of the team must lead his men after scientific principles. It is not sufficient that each man of the team does his share well, with a minimum expenditure of energy and a maximum result, thereby contributing a maximum of helpful energy to his side. The captain of the team, in addition, must constantly use his brains to direct the combined efforts of the whole team in such a way that the collective result is likewise attained with a minimum expenditure of energy. Only if the leading is scientific—an expression which may frequently be found in newspaper reports of football matches—will the team have a reserve of energy for the supreme effort that decides the victory.

In athletic sports it is the muscular energy of one party which is pitted against that of the other side. The issue depends upon which side is able to bring the greater sum of energy, measured in $\text{kg.} \times \text{metre}$, to bear upon the matter that is to be set in motion, whether this be the body of the athlete himself, a boat, or a ball. Victory is rarely to the party that is superior solely in brute force ; but to the man who has the more complete control over his body, or that company of men who, being each of them efficient in this respect, have learned better than their opponents to play as much with their brains as with their muscles.

Why this rather long dissertation upon the muscular side of athletic sport ? When people begin to look out for the means of improving the efficiency of industrial labour, a great deal may be learned by a close study of the labour which men spend upon athletic sports for their own pleasure. Efficiency of labour, whether it is used in productive operations or in sport, depends essentially upon the same conditions being fulfilled,

viz. upon gaining a maximum result with a minimum expenditure of energy. Many years before I had heard of the Taylor system of scientific management of labour, I pointed out publicly the importance of studying sports with a view to utilize the experience which has been accumulated in this field to improve the quality of industrial labour. In labour spent in athletic sports we have, to use a modern scientific expression, pure cultivation of efficiency.

When mankind advances so far that it begins in all seriousness to measure the enormous waste which is caused by the inferiority of industrial labour, and seeks remedies for avoiding this waste, the teachers, who will no doubt be commissioned to build up a science of the proper execution of labour, will give object lessons in every field where athletic sports are practised. It will be possible to demonstrate by which means economy of energy may be attained, and how much the quality of a performance depends upon the degree to which the sportsman has been willing to train his body and will in the direction of intensity of effort. In many, or rather, in all, athletic sports victory falls to the man who has trained himself to have his energy under his complete control, so that he may command at the crucial point of the contest a sufficient sum of energy for a highly concentrated spurt of intense force. In all cases the sportsman must have trained himself so well that he may accurately gauge the sum of energy which he has at his disposal at the outset; and he must spend the whole of it, without leaving any surplus, during the contest which he has undertaken. The character of the contest determines how he is to dispose of this energy. The man who would attempt to run a five-mile race at the same initial speed as a race of a hundred yards would soon find himself out of wind; but whether the race is long or short, the whole energy ought to be temporarily spent at the end of the race if there are strong competitors. This means that the sportsman must run with intensity. This last word contains, indeed, the alpha and omega of the science of athletic sports.

However much labour spent in athletic sports differs from labour executed in productive operations, it is subject to the same laws of efficiency. In productive labour, also, the movements must be made as small and inexpensive as possible.

The entire sum of energy at disposal at the beginning of the work must be spent during the period of labour; and the rate of efficiency is practically proportionate to the degree of intensity of the labour. With certain obvious limitations, the labour is always better executed if it is done rapidly than if the labourer works leisurely—and rapidity of work is an accompaniment of intensity.

For fear of being misunderstood I must expressly state that I do not advocate that the speed of industrial labour should be raised to the standard of the best achievements in athletic sports. The human body may, as previously remarked, be compared with an electric accumulator. The body is discharged of its energy every twenty-four hours, and re-charged during the hours of sleep. Every morning when we rise from our night's sleep we have therefore at our disposal only the sum of energy with which our body has been charged. We cannot dispose of more; the problem is only to spend it to the best possible purpose.

It is a well-known fact that if a sportsman continues his training beyond a certain point, his fitness not only does not increase, but he becomes "stale," as it is called in sporting language. The reason is, probably, that the exercises which are practised during training set up a rapid change of matter in the body by which all superfluous tissues are converted into strong muscular fibres; but this process cannot continue beyond the point when all such tissues have been converted. This observation shows that not even by the most systematic training can the energy of the body be increased beyond a certain point, and excessive efforts can therefore not be sustained beyond relatively short periods. The utility of athletic sports does not consist in their giving us standards of exertion that may regularly be demanded of healthy individuals. Such achievements must, on the contrary, be looked upon only as indications of what may be performed occasionally under exceptional conditions. Even so they are very useful as showing the wonderful elasticity of the human physical and psychical organism.

It is, however, of the utmost importance to be able to determine by a study of athletic sports many factors in connexion with human energy.

How large, for instance, is the sum of energy that is at our disposal when we begin the labours of the day? How frequent and how long ought to be the intervals for rest, if we are to yield a maximum of effort during the day? How large is the influence of a suitable composition and the quality of our food upon the energy which we can yield? How do external conditions, such as temperature, agreeable or disagreeable surroundings, etc., act upon our energy? How much may hope and cheerfulness or disheartening circumstances tend to raise or lower the quality of our performance?

Moreover, all the movements of a sportsman during a game ought to be minutely observed, and the sum of energy which their performance requires should at the same time be measured. If essential and well-executed movements could, by such observations, be accurately compared with superfluous and badly executed movements, we should be in a position to demonstrate the extent of the waste of energy which faulty movements of the muscles involve.

By such studies of athletic sports one may, in short, hope to acquire the most valuable insight into the very complex working conditions of that most remarkable power-engine, the human body.

Industrial labourers may train themselves to do more efficient work just as athletes do; and, like the latter, they might with great advantage avail themselves of experts who might teach them how to economize their energy in the movements which constitute their daily labour. But no amount of training or teaching would make it possible for industrial labourers to work all the year round, week in and week out, with that tremendous degree of intensity which athletes sometimes reach during short performances. This would very soon wear the labourers out, and they would collapse. Industrial labourers who are compelled to work continually must rather follow the principle which induces an athlete not to start a five-mile race at the same initial speed which he would use for a hundred yards only.

While bearing this in mind one must not lose sight of the fact that in industrial labour, just as in sports, intensity is the most important element of efficiency. It should therefore be a subject of the most careful analysis, what is really the

sum of energy which an average healthy industrial labourer has at his disposal for doing labour, and with what degree of intensity he can work continuously without impairing his health. As intense work cannot be continued for as many hours as labour done in a more leisurely manner without overtaxing the strength of the labourer, this analysis really turns upon the question: Within how few hours should the daily work of industrial labourers be concentrated in order to obtain a maximum of yield with a minimum expenditure of energy? The same thing may be expressed in other words thus: What is the maximum of intensity which may be developed by industrial labourers in continuous occupations without overtaxing their strength and permanently impairing their health?

So far I have attempted to discuss the problems which are involved in the employment of human muscular and nervous energy in productive labour with the aloofness that is possible when discussing forces of nature. This is fully justifiable, because from one point of view human energy may be measured in $\text{kg.} \times \text{m.}$ like all other forces that are used in productive activity. It is therefore essential to accustom oneself to study this energy also in the light of the laws of mechanics.

The problem, how to utilize human energy most economically in the industries, is unfortunately greatly complicated by the circumstance that nearly the whole of the sum of energy which humanity collectively has at its command is expended in the form of labour done for a wage. The diversity of interests which is thereby introduced has tended to involve the entire subject in obscurity.

Athletic sports are generally, and ought always to be, carried on solely for the love of the thing, and for the individual or collective ambition of the sportsmen engaged in the game. Each man has, therefore, the strongest motive to exert himself to achieve as good results as possible; the higher he can carry his efficiency the more prizes does he gain.

In industrial labour conditions are nearly always different. Wages are still as a rule fixed, not according to the real efficiency of each individual wage-earner, but more or less on a rule of thumb, according to the supposed average efficiency of all the labourers. The result of this illogical arrangement of the regulation of wages has actually been what might have been

predicted. None of the many labourers have any strong inducement to exert themselves more than their fellows; there are, therefore, no energetic leaders, as in the field of sports, to show how much might really be achieved; and the low average standard of efficiency must with difficulty be maintained by the employer by a more or less strict discipline, and by trying to get rid of those among the labourers who fall too much below the standard. As wages cannot permanently advance materially above the level which is indicated by the rate of efficiency, they remain comparatively low as long as this system, or rather lack of system, prevails.

Industrialization of manufactures by the introduction of power machinery began in England, as explained in a previous chapter, in the last decades of the eighteenth century; on the Continent and in my own country, Norway, this change did not take place before the middle of the nineteenth century. This revolution was effected in the characteristic English empirical-inductive way, and not on the scientific and systematic principles which have been so admirably developed during the last decades in Germany.

In England itself, where industrialism in the modern sense had originated, the manufacturers continued during generations to conduct their business in the grooves into which it had fallen, from the very beginning of this revolution, more or less by accident. This highly conservative tendency of British manufacturers is quite as characteristic of the nation as it was that the original inventions which started the industrial revolution should be made in England. On the Continent it took years before the improved technical education exerted any very pronounced influence upon the planning and practical management of industrial establishments.

My personal knowledge of manufacturing establishments, which dates back to about the year 1890, is, I regret to say, mainly restricted to Norway, as I have not had an opportunity of visiting many such concerns in other countries. But as far as my limited experience goes, I believe that it justifies me in saying that the lack of what I may perhaps be allowed to call "rationality," which was so predominant a feature in Norwegian mills and works about thirty years ago, was at the same time hardly less pronounced in English or German

industrial establishments. I do not insist upon this point ; but, as an illustration of what I am alluding to, I may mention what I saw when visiting in 1910 an important German engineering works. At the time of my visit they were occupied in demolishing what had once been the main building of the works. To me it was very interesting to observe that the older parts of this building, which was not more than twenty years old, presented the same unsuitable arrangements, with badly lighted rooms, which I had so frequently seen in old Norwegian works ; and the engineer who acted as my guide told me, on my direct question, that it was not more than ten to fifteen years previously that it became common in Germany to adopt the modern and, as I would call it, scientific system for utilizing the building site and arranging the buildings. In the same year I visited also large English works, some of which were decidedly antiquated in respect of their general arrangements.

At about 1890 a visitor to a Norwegian manufacturing mill or works would as a general rule find that the buildings were so ugly that one might sometimes be inclined to think that those who had planned them had gone out of their way to make them look as hideous and forbidding as possible. When an industrial concern was started, frequently in a small way, a modest little building had been erected to house it, with no thought of future extensions and enlargements. As it grew, and more room had to be provided, the additions were usually made in the most haphazard manner. The result was that the work-rooms were not situated conveniently to each other, or for the order of the manufacturing processes ; and this often caused the most awkward handling of raw materials and half-manufactured products. There were as a rule no travelling cranes or similar mechanical appliances ; and the work involved in shifting things from one part of the works to another had mostly to be done by human muscular energy.

The work-rooms were too often small and low, badly lighted, heated, and ventilated, and they were often fearfully overcrowded. Passages between different buildings were usually quagmires after prolonged rains. One might frequently come across the most outrageous blunders in regard to the placing of the machines in proper relation to each other and to

the direction of the manufacturing processes. In many mills which I visited at that period, the narrowest, darkest, and most dirty hole in the whole building was considered quite good enough for the heart of the mill—the steam engine. At the time when the first Norwegian Factory Act was passed I remember visiting a fairly large wooden woollen factory, in which some of the labourers were housed on the second floor. I remarked to the manager who took me round that the Factory Act had certainly not come too soon.

It was not before 1894, I think, that I first saw a “tool-room” in a Norwegian engineering works that had been started by two young engineers who had become familiar with this institution in the United States. For those of my readers who do not happen to be familiar with the routine of engineering works, I must explain that the tool-room, which is quite isolated from the rest of the shop, is fitted up with grinding and repairing machines. One or many mechanics, according to the importance of the firm, who become specialists in grinding and mending irons and other tools, are employed. When the workman at a lathe or other iron-working machine finds that his iron has lost its edge, he does not leave his place; he simply presses a button, and a boy from the tool-room comes. Through him he orders a new iron, and sends the faulty one back for repairs. In subsequent years such tool-rooms have been introduced in all Norwegian engineering works; but previously the workmen, even in the largest firms, had to leave their machines, often hunt for what they might want, and do the grinding themselves. Imagine what a difference!

Thirty years ago the number of foremen in industrial establishments was quite insufficient, and their qualification for their duties often doubtful. When one job was finished, the labourers in question were therefore compelled to wait about and lose a good deal of time in bringing together the materials, etc., which were needed for starting the next job.

I believe I am right in saying that it was not before close upon the year 1900 that I first had an opportunity of observing the American so-called card system of book-keeping and control in use in a Norwegian establishment; and I do not think it is saying too much that where this system has been practised

for some time, the manager will be unable to imagine how he would be able to get along without it.

If I had had a technical education and had been employed in industry, I should no doubt have been able to give more poignant illustrations of the backward conditions which generally prevailed in Norwegian industries thirty years ago. The examples I have given must suffice. Men of a younger generation will perhaps be inclined to believe that I have used too dark colours; but people who were conversant with industrial activity at that time will, I believe, agree that I have not overdrawn the picture.

The arrangement of the buildings and work-rooms, and the personal treatment of the labourers, created an atmosphere—this word taken both in a literal and a figurative sense—which was very far removed from the cheerful conditions under which sportsmen are able to achieve triumphs of efficiency. Wages were low, hours of work were very long, and the management hardly gave the workpeople even a hint, or any leadership as to how they might gain a higher rate of efficiency.

At that time it had not become the rule to carry on industrial undertakings as limited companies; they were generally managed by the owners. These grumbled, as employers of labour nearly always do, at the low rate of efficiency of their labourers, who were in Norway, with few exceptions, industrial workpeople of the first or the second generation, and who had therefore not acquired much practice or hereditary skill. The owner had very seldom any theoretical insight into the labour problem. He solved it in a practical manner by paying low wages. As there was always an influx of crude labour seeking employment in the mills, there was as a rule no lack of people who were willing to accept employment on the terms of the employers. The mills did not represent a heavy capital investment, competition was not very keen, and the profit was generally satisfactory in spite of irrational arrangement of the mill, faulty management, and low efficiency of the labour.

This sketch of the industrial conditions which prevailed in Norway thirty years ago can be applied, I believe, to the conditions which existed at the same time in other countries of Western Europe. If there was a difference, it consisted in this, that the changes which have taken place in Norway since

then had perhaps begun a few years earlier in those countries which were industrially more advanced than Norway. The British manufacturers altered the organization of their factories, but they turned out a fair quantity of products of good, albeit somewhat heavy quality, because they had at their command labourers who had acquired during several generations a tolerably high standard of efficiency, and who were thoroughly imbued with the spirit of industrialism. Against this enormous advantage must, however, be placed the appalling hideousness of the majority of the large English manufacturing towns. This hideousness stamped those who were compelled to obtain their livelihood as workpeople in the mills and factories of these towns with a coarse brutality, which was the more fatal because not counteracted by the civilizing influence of a good general school education.

In all countries child labour was much used without any restrictions.

Thirty years is not a long time in the evolution of civilization ; but if we could be transferred back to 1890 we should feel as strangers in a strange land. Public opinion at that time still retained the idea which had the sanction of all past ages, that the world was arranged for the exclusive benefit of the few. Employers of labour, both in manufactures and agriculture, demanded very long hours of labour for little pay. When the Norwegian labourers at about that time began to imitate the example of their English fellows, and formed the first trade unions, this was condemned by the "upper" classes, and strikers were reckoned as anarchists and evildoers of the deepest dye.

If only the labourers did not demand higher wages, the Norwegian employers bothered as little as possible about them and the conditions at their place of work. The majority of them do not appear to have had an inkling of an understanding of the fact that the efficiency of labour could be lowered by bad arrangement of the mill and by bad management of the labour, or that they were personal losers by the consequent low rate of efficiency of the labour. The theory that the aim of existence ought to be "the greatest good of the greatest number" was certainly not generally accepted by employers in Norway thirty years ago. Neither did the majority of

the working classes entertain such a view. They were satisfied if only a few and their most obvious grievances were removed, and if wages were raised a little to meet "the dearness of living"—an always recurring complaint.

During the last generation a great change has come about in my country in the relation between employers and the wage-earners. I am speaking particularly of conditions in Norway because I have had an opportunity of watching the change from year to year. But I give my words a general application because the movement of which I am speaking is a universal one and not restricted to Norway only.

I used above the impersonal expression about this change : it has come about with full purpose. For the change in the most comprehensive of human relations, that of employers and the employed, has been a result of the inherent forces of the economic and technical evolution much more than by a conscious striving on the part of employers and wage-earners to reach a more ideal relationship ; and it is therefore also still very far from the ideal. The two parties have, on the contrary, carried with them the heavy load, which is unfortunately an inheritance from past ages, of misunderstandings and misconceptions as to the true and real nature of the contract by which the workmen give the employers the disposal of their time and energy in return for a stipulated wage.

Wages have advanced considerably in the course of the last thirty years. The general efficiency of the Norwegian labourers has at the same time also risen ; it is, however, a more than doubtful question whether the efficiency has risen as rapidly as wages. Personally I am inclined to believe that the actual cost of a given sum of labour, measured in effective kg. \times metre energy transferred to matter, is now somewhat higher than it was in 1890.

The advance of wages is due to the constantly increasing demand for labour, which is a natural result of the growth of the industries and of the great emigration that has taken place during this period. Owing to the influx of labour to the industries of the towns, combined with the large emigration, farm labourers have obtained higher wages as well as industrial labourers.

Not only have the various Factory Acts which have

been passed compelled the industrial employers to provide larger and better ventilated and lighted work-rooms, with better safeguards against accidents and better sanitary arrangements, but the growing competition between them to secure a sufficient number of labourers has compelled them to go considerably beyond the demands of the law in regard to ensuring the well-being of their workpeople. The hours of work have been shortened, by strikes or threats of strikes, in spite of the strenuous opposition of the employers.

It is not often that the employers have granted higher wages and shorter hours, and better arrangements of the work-rooms, etc., of their own free will. Competition has compelled them to grant them. And it is also quite an exception when workpeople fully appreciate what has been done for their well-being, and the advance of wages which they receive, or that they show their appreciation by willingness to exert themselves more strenuously than before in the service of their employers.

Advancing wages without a corresponding advance in the efficiency of labour results in an increase of the cost of production. The employers have tried to counteract this, during the period under review, mainly by the same means which have been used in past epochs—by a constant improvement of the methods of production.

Two factors have in a special degree shaped recent industrial evolution in Norway. These are the introduction of American machinery and the general adoption of the German scientific system. In combination they have exerted the most decided influence not only upon the technical development of the industries, but quite as much on agriculture in our country.

The summer in Norway is very short, and this circumstance, together with the growing scarcity of agricultural labourers and the higher wages which farmers have had to pay, has resulted in the importation of American farm implements in very large quantities. There is probably no country in the world, the United States not even excepted, where so many sowing and harvesting implements are used as in Norway, when the exceedingly limited extent of the arable land in our country is properly considered. But it is, unfortunately, no uncommon thing to see expensive farm implements left standing on the fields during the whole winter, a sure indication that the owner has not yet learnt

the very rudiments of the management of labour when it is employed together with costly modern implements. Many farms in our country would have gone out of cultivation if American implements had not saved the situation ; but one need not travel much in our country districts to be struck by the many signs which indicate that the management of labour has not kept pace with the technical improvements that have been introduced.

In the industries, American machines and tools have been largely introduced, and also, but to a much smaller extent, American methods of administration ; for instance, the tool-room in engineering works, and the card system of book-keeping and control. The German system, as taught in their admirable technical schools, at which so many Norwegians have studied, has exerted a most profound and rapidly growing influence upon the technical development of the Norwegian industries in the course of the last fifteen to twenty years. This influence makes itself more particularly felt in the general arrangements of the buildings, and in the placing of the machines in relation to each other. Instead of building without any consideration to future enlargements, the buildings are nowadays always planned in such a manner that extensions, when required, may be carried out without interfering with the organic working of the factory in relation to the proper order of the different manufacturing processes. The dominant idea is that there must be no superfluous handling of raw materials or of the products in the successive stages of manufacture.

Altogether the buildings are planned and constructed with a view to save human labour as much as practicable in the manufacturing processes, and to make the indispensable human labour as easy as possible. Mechanical means of various kinds for handling things have been largely introduced with the same object—to save labour.

There is no valid reason why a factory building should be ugly. On close examination it will generally be found that when a factory is really ugly, it is also unsuitable for its purpose. If it is so designed that it has fully realized its purpose, it will usually have a pleasing appearance.

A visitor to modern Norwegian mills and factories will find this observation amply confirmed. At most of them he will at once perceive by their architecture and the disposition of the

buildings that they have been planned by men who have had a clear perception of their purpose, and of the most suitable means for realizing it. In many cases the owners have not grudged the expense of heightening the pleasing effect of well designed buildings by the addition of appropriate architectural decorations. Above everything, the work-rooms have been made large, with plenty of light, good ventilation, and efficient arrangements.

This striking change in the planning and arrangement of factories has most profoundly altered the surroundings under which the labourers of to-day do their work compared with conditions which prevailed thirty years ago. It would be impossible to overrate the influence of this change upon the efficiency of labour.

A reform in the management of the work and routine in the factories has likewise taken place *pari passu*. Better and, in particular, more high-speed machines have constantly been introduced. By the help of the American card system or similar improvements in book-keeping, the management has been able to follow in the minutest details every part of the manufacturing processes. The manager knows to a small fraction the cost of raw materials, and of every one of the manipulations through which they pass before leaving the factory as finished products.

The result of all the improvements which have been introduced is a very material reduction of the cost of production at the same time as the daily earnings of the labourers have constantly advanced.

As an instance I may mention the Norwegian match industry. About thirty years ago the work of putting the matches in boxes was still done by hand. In spite of their great practice, the women who did this work were unable to earn more than 6s. 9d. to 9s. a week. When the general level of wages began to advance, no new labourers could be obtained who were willing to do this kind of work; and the industry was threatened with a stoppage in consequence. At this critical juncture automatic machines for filling the boxes were introduced; and the match trade is at the present time prosperous, while the girls who are employed, and who do their work in splendidly arranged and healthy factories, earn 28s. or more per week. This is precisely one of the branches of industry

in which a well-devised method of book-keeping has helped the management to meet the growing international competition successfully.

The better control which the management of factories can now keep has led to a much more strict supervision of the amount of work which each individual labourer yields.

The many improvements which have taken place in the course of the last twenty-five to thirty years in the direction of a more systematic administration of Norwegian industrial undertakings, and which are due mainly to impulses received from Germany, ought to have led to a radical solution of the most important problem—the personal relations between the management and the labourers. If one were justified in drawing conclusions from the attitude which the Norwegian Employers' Association has frequently taken, one might come to the conclusion that the majority of Norwegian employers were still entangled in the old illusion that an advance of daily wages must necessarily be a loss to themselves, or, at all events, an addition to the cost of labour which must be charged to the consumers. But there are good reasons for believing that a great many managers are on this point considerably in advance of the Association that represents them in their intercourse with the labourers, or, rather, with the Trade Unions. It is, at all events, not an infrequent occurrence to hear the following reasoning used by large employers of labour: The space which a particular machine occupies costs so much per annum; general expenses are so much on each particular product, and the actual wages of the man who tends the machine amount to such a percentage of the total cost of the product. If he were willing or able to turn out double as much work with the machine, and he thus could earn twice the sum of daily wages, it would be good business for us.

I mention this to show that some at least of the Norwegian employers of labour have been driven by the logic of the problems which daily present themselves for solution, to conceive the true relation between the dead capital and the living force of the labourers who manipulate the machines for them.

Whether those employers who have learned to appreciate efficiency of labour at its full value, and who are willing to back their opinion by paying wages in just proportion to individual

efficiency, are to-day few or many, a minority or a majority among the employers in Norway, the very fact that there are some who reason in this manner and act accordingly, is one of the most promising things which it has been my good fortune to observe during my frequent visits during the last generation to Norwegian mills and factories. It is the leaven which will at length fundamentally change the attitude of all employers of labour to the question: how wages are to be determined. Among other things it will lead to a very different handling of the all-important question of fixing piece payment. The root of the many troubles in recent years between the Employers' Association and the Trade Unions must be sought in the still prevalent tendency of many managers to cut piece rates when they see that their workpeople earn high daily or weekly wages.

Wages and profit are both derived from the sale of the commodities which are produced, and the sum which may be divided between capital and labour is determined by the effectivity of the method and the sum and efficiency of the labour. When labourers in all branches of production receive equal wages for an equal sum of efficient work, the balance of the sale of the products would leave a profit for capital which would correspond to the stage of technical evolution and the rate of capitalization in each particular branch of production.

If the relations between capital and labour were quite rational, the only serious difficulty of arriving at a just division of a joint production would be to find a reliable standard for measuring exactly the sum of efficient energy which each labourer contributes compared with the energy and efficiency of all other labourers.

It would be very difficult to discover a standard for measuring the energy and efficiency of labour which everyone would be willing to acknowledge. And quite apart from this difficulty, humanity labours under the terrible drawback that the relations between capital and labour are still as far as possible from being rational.

There is a legend of two Knights Errant who met fully armed. They began a dispute about the armorial signs on a certain shield which they both saw. The dispute ended in a combat in which they killed each other. It was afterwards

discovered that the shield was painted differently on each side. This story characterizes not inaptly the mutual attitude of employers and employed. They look upon the question of wages from quite different points of view. The natural result is that they are unable to agree; but frequently fight each other savagely, although their interests are, when properly considered, identical.

The conflict of interests arises in this way. The labourer who has to give his employer the use of his energy during the whole time of work, measures against this sacrifice his daily or weekly earnings, which he nearly always considers to be insufficient. For the conceit of which we are all possessed usually prevents an employee from acknowledging that his labour is not so efficient as to deserve a higher pay. To the employer, on the other hand, the only thing which is material is the cost per unit of efficient labour. Basing his calculation upon a low average efficiency, he is generally unwilling to grant an individual labourer a higher daily wage, fearing that it will only result in raising the unit cost of labour.

An ideal arrangement would be that wages were automatically and instantaneously changed with changes in the efficiency of labour, or that conditions were the same for industrial labour as for labour in sport, that each man at once received his full reward for intensity of effort. Nothing in the world can prevent daily wages from being in the long run adjusted—by a rough-and-ready method, it is true, but upon the whole with a remarkable degree of accuracy—in accordance with the rate of efficiency of labour. But under the highly complex conditions which exist in the various productive activities, and as a result of historical evolution, the rate of pay is ordinarily fixed in accordance with the average efficiency of the majority of wage-earners, and not, as in sports, according to the individual efficiency of each labourer.

Whatever the effectiveness of the method, the quantity of the production is co-determined by the efficiency of labour. It is, therefore, evident that the two parties, capital and labour, have an equal interest in an increase of efficiency, provided wages are regulated accordingly; for when labour is highly efficient it will command maximum wages, and the profit on capital will be larger in proportion as the output of the machinery is increased.

The stupid and short-sighted policy in past ages on the part of capital, or its representatives the employers of labour, to keep daily wages low, in the mistaken belief that thereby the unit cost of labour was kept down, has prevented a rapid increase of efficiency. This has nevertheless grown, and although employers as a class may be entangled in their old fallacy, there are certainly some employers who have come to a clear understanding of the fact that it is in their own interest that efficiency should grow rapidly; and this will not happen unless wages are advanced in at least the same proportion. Owing to the rapid growth of the rate of capitalization this view will soon be adopted by the majority of employers; and when this has occurred it will govern the policy of them all.

The time is therefore near at hand when the responsibility for the obstruction which has hitherto prevented a rapid increase of the efficiency of labour, and consequently also of wages, will no longer rest with the employers. This obstruction comes now, on the contrary, mostly from the working classes themselves, or, to be more correct, from the trade unions.

It is a melancholy phenomenon that the majority of the working classes show no inclination to exert themselves more than they are absolutely compelled to do on behalf of the employer who pays them their wages, and that they are as a rule quite indifferent to the loss which they may cause by careless handling of machinery and implements, by waste of materials and requisites, and by negligenee as to the quality of the products. This apathy of the wage-earners, and the almost total absence among them of any ambition with regard to the efficiency of their labour, would in itself constitute, and it has in past ages always constituted, a formidable barrier to rapid economic progress. It is almost useless to try to combat this regrettable tendency by argument. The only hope is that it will disappear, or at all events be weakened, as the demands of the working classes for comforts and luxury increase.

The practice of the wage-earners to give as little energy as possible in return for their wages is a common trait of human nature. The stupid policy which the employers have hitherto nearly always followed of remunerating labour in niggardly fashion, has most decidedly not tended to counteract this

practice, or to overcome the passive resistance of the wage-earners when called upon to make increased exertions. Excessively long hours of work might be enforced as long as few opportunities of employment were open to the working classes ; but long hours of work are not necessarily equivalent with much work. In past ages the constant fear of losing employment without the chance of finding a new one was a relentless task-master of the working classes. But the experience of slave labour proves sufficiently that not even the most cruel task-master can make unwilling people work with a high degree of efficiency ; and poor living would have prevented the labourers of past ages from reaching a high efficiency even if they had been willing. In the course of the last generation the demand for labour has constantly grown, and the consequence has been that the employers have not been in the position to be very exacting in regard to the quality of labour which they received. The labourers have been tempted by this circumstance to shirk their duties, and have frequently been permitted to do so with impunity. If one master complained, they gave him notice and found employment with another.

Altogether, economic conditions as they have developed during the last generation, particularly in Europe, would not seem to have been conducive to an improvement of the efficiency of hired labour. When there has, nevertheless, not only not been a general retrogression in this respect, but on the contrary a not inconsiderable progress of efficiency, it is the almost universal rise of the standard of living of the working classes which has provided the stimulant to more energetic work. For otherwise the working classes would not have obtained or permanently retained that rise of wages which they needed for the satisfaction of their growing demands. Few labourers are probably conscious of having been thus influenced by their desire for better food, more comfort and luxuries ; but the logic of the evolution has acted upon their volition, just as it has begun to determine the more rational treatment of the wages question by the employers of labour.

The inherent forces of the economic and technical evolution through which humanity is passing would perhaps, if not counteracted by other forces, have led during a comparatively short time to a decided change in the relations of capital and

labour, and a rapid rise both of efficiency of labour and of wages.

The gradual development in the direction of better relations between capital and labour, higher efficiency of labour, and better wages has, however, been crossed, and considerably delayed, by a mighty movement of a mixed political, economic, and moral character.

In this book I have on many occasions laid stress upon the fact that until the industrial revolution in England had had time to change materially the economic foundations of human civilization, the view had been held in all the past ages by the upper classes that this world was arranged for the special benefit of the few, whom it was the duty of the majority to serve—economically as well as politically. The most remarkable thing is that this view was accepted, or at all events it had never been seriously challenged by the great majority—"the labouring poor," as Adam Smith called them.

Ideas are among the most stubborn facts in history; and the view to which I have alluded above has been retained by the well-to-do in spite of the great changes of the last 150 years; so much so that it has in the main moulded the policy of the employers towards the employed until within the last fifteen to twenty years. But this conception of the world, and of the rights and duties of the individual in his relation to society, has been completely undermined by the solvent of the innumerable new ideas which have been born in rapid succession since the French Revolution, and the still more important industrial revolution in England. These new ideas have become, thanks to the printing press, newspapers, and improved school education, in an almost incredibly short time, the common possession of humanity. Never in the history of civilization have ideas had, even approximately, the same power of transforming men's thoughts and aspirations as during the last hundred years. Instead of the conception that the world is created for the special benefit of the few, the theory that the aim of existence is "the greatest good of the greatest number" is proclaimed in the markets and the work-rooms as well as from the chairs of learned professors.

To this cycle of new ideas which have obtained general currency belongs the basic theory of Social Democracy.

Although this system has nowhere yet been carried into practice, it has exerted a very strong influence upon the policy of the trade unions, and for the entire labour world the doctrines of Social Democracy have become a sort of new religious creed. The novel forces which have thereby been set in motion have already during the last generation played a very important *rôle* in shaping the course of human civilization, and they are without doubt destined to exert a yet more powerful influence—for good or evil—in generations to come.

Before proceeding with the discussion of the subject of this chapter, it will therefore be necessary to examine the evolution of the ideas upon which Social Democracy has been built up, and to show, if possible, how this new factor is likely to act upon the relation between employers and employed, and therefore also upon the question of the management of labour.

CHAPTER XV

STUART MILL AND KARL MARX

IN order to ascertain what the so-called "classical" school of Political Economy taught about wages and the relation between wages and profit, it is sufficient to make an extract of what Stuart Mill had to say upon these topics in his *Principles of Political Economy*, published in 1848, for this great and remarkable work may be looked upon as the common denominator of the ideas of his predecessors from Adam Smith to his own time.

The extracts which I am about to give will, I trust, be considered impartial, and as giving correctly the gist of his opinions. But I have at the same time made my selection with a view to the observations which I intend to make upon them.

EXTRACTS FROM "PRINCIPLES OF POLITICAL ECONOMY"

Book II, Chap. XI, § 1. "Wages depend mainly upon the demand and supply of labour; or, as it is often expressed, on the proportion between population and capital. By population is here meant the number only of the labouring class, or rather of those who work for hire; and by capital, only circulating capital, and not even the whole of that, but the part which is expended in the direct purchase of labour." . . . "There is unfortunately no mode of expressing, by one familiar term, the aggregate of what may be called the wages fund of a country; and as the wages of productive labour form nearly the whole of that fund, it is usual to overlook the smaller and less important part, and to say that wages depend on population and capital." . . . "Wages not only depend upon the relative amount of capital and population, but cannot, under the rule of competition, be affected by anything else. Wages

(meaning, of course, the general rate) cannot rise but by an increase of the aggregate funds employed in hiring labourers, or a diminution in the number of the competitors for hire ; nor fall, except either by a diminution of the funds devoted to paying labour, or by an increase in the number of labourers to be paid."

§ 2. After a discussion of the variations of wages with good or bad trade, and of the opinion that wages vary with the price of food, rising when it rises, falling when it falls, he says: "Mr. Ricardo assumes that there is everywhere a minimum rate of wages: either the lowest with which it is physically possible to keep up the population, or the lowest with which the people will choose to do so. To this minimum he assumes that the general rate of wages always tends; that they can never be lower, beyond the length of time required for a diminished rate of increase to make itself felt, and can never long continue higher. This assumption contains sufficient truth to render it admissible for the purposes of abstract science; and the conclusion which Mr. Ricardo draws from it, namely, that wages in the long run rise and fall with the permanent rise of food, is, like almost all his conclusions, true hypothetically. But in the application to practice, it is necessary to consider that the minimum of which he speaks, especially when it is not a physical, but what may be termed a moral minimum, is itself liable to vary. If wages were previously so high that they could bear reduction, to which the obstacle was a high standard of comfort habitual among the labourers, a rise of the price of food, or any other disadvantageous change in their circumstances, may operate in two ways: it may correct itself by a rise of wages, brought about through a gradual effect on the prudential check to population; or it may permanently lower the standard of living of the class, in case their previous habits in respect of population prove stronger than their previous habits in respect of comfort. In that case the injury done to them will be permanent, and their deteriorated condition will become a new minimum, tending to perpetuate itself as the more ample minimum did before. It is to be feared that of the two modes in which the cause may operate, the latter is the more frequent, or at all events sufficiently so to render all propositions ascribing a

self-repairing quality to the calamities which befall the labouring classes practically of no validity." . . . "Unfortunately it is a much more difficult thing to raise than to lower the scale of living which the labourers will consider as more indispensable than marrying and having a family. If they content themselves with enjoying the greater comfort while it lasts, but do not learn to require it, they will come down to their old scale of living. If from poverty their children had previously been insufficiently fed or improperly nursed, a greater number will now be reared, and the competition of these, when they grow up, will depress wages, probably in full proportion to the greater cheapness of food. If the effect is not produced in this mode, it will be produced by earlier and more numerous marriages, or by an increased number of births to a marriage. According to all experience, a great increase invariably takes place in the number of marriages in seasons of cheap food and full employment." . . .

"When, indeed, the improvement (in the condition of the working classes) is of a signal character, and a generation grows up which has always been used to an improved scale of comfort, the habits of this new generation in respect to population become formed upon a higher minimum, and the improvement in their condition becomes permanent. Of cases in point, the most remarkable is France after the Revolution. The majority of the population being suddenly raised from misery to independence and comparative comfort, the immediate effect was that population, notwithstanding the destructive wars of the period, started forward with unexampled rapidity, partly because improved circumstances enabled many children to be reared who would otherwise have died, and partly from increase of births. The succeeding generation, however, grew up with habits considerably altered; and though the country was never before in so prosperous a state, the annual number of births is now nearly stationary, and the increase of population extremely slow."

§ 3. "Except therefore in very peculiar cases, it is impossible that population should increase at its utmost rate without lowering wages. Nor will the fall be stopped at any point short of that which either by its physical or its moral operation checks the increase of population. In no old country, therefore,

does population increase at anything like its utmost rate ; in most, at a very moderate rate ; in some countries not at all. These facts are only to be accounted for in two ways. Either the whole number of births which nature admits of, and which happen in some circumstances, do not take place ; or if they do, a large proportion of those who are born, die. The retardation of increase results either from mortality or prudence ; from Mr. Malthus's positive or from his preventive check : and one or the other of these must and does exist, and very powerfully too, in all old societies. Wherever population is not kept down by the prudence either of individuals or of the State, it is kept down by starvation or disease."

The rest of Chapter IX is taken up by an examination of the question of a restriction of the increase of population.

Chapter XII discusses popular remedies for low wages.

In § 4 he says : "No remedies for low wages have the smallest chance of being efficacious which do not operate on and through the minds and habits of the people. While these are unaffected, any contrivance, even if successful, for temporarily improving the condition of the very poor would but let slip the reins by which population was previously curbed."

Chapter XIII : Remedies for low wages, § 2. "Those who think it hopeless that the labouring classes should be induced to practise a sufficient degree of prudence in regard to the increase of their families, because they have hitherto stopped short of that point, show an inability to estimate the ordinary principles of human action. Nothing further would probably be necessary to secure that result than an opinion generally diffused that it was desirable. As a moral principle, such an opinion has never yet existed in any country." . . . "One may be permitted to doubt whether, except among the poor themselves (for whose prejudices on this subject there is no difficulty in accounting), there has ever yet been, in any class of society, a sincere and earnest desire that wages should be high. There has been plenty of desire to keep down the poor-rate, but, that done, people have been very willing that the working classes should be ill off. Nearly all who are not labourers

themselves are employers of labour, and are not sorry to get that commodity cheap."

Chapter XV : of Profits.

§ 1. "As the wages of the labourer are the remuneration of labour, so the profits of the capitalist are properly, according to Mr. Senior's well-chosen expression, the remuneration of abstinence. They are what he gains by forbearing to consume his capital for his own uses, and allowing it to be consumed by productive labourers for their uses. For this forbearance he requires a recompense."

He then goes on to explain that of the gains which the possession of capital enables a person to make, a part only is properly an equivalent for the use of the capital itself. This is the interest; the rate of profit greatly exceeds the rate of interest. The surplus is partly compensation for risk and partly remuneration for the control of the concern.

"The gross profits from capital, the gains to those who supply the funds for production, must suffice for these three purposes. They must afford a sufficient equivalent for abstinence, indemnity for risk, and remuneration for the labour and skill required for superintendence."

§ 5. . . . "The cause of profit is, that labour produces more than is required for its support. The reason why agricultural capital yields a profit is because human beings can grow more food than is necessary to feed them while it is being grown, including the time occupied in constructing the tools and making all other needful preparations; from which it is a consequence, that if a capitalist undertakes to feed the labourers on condition of receiving the produce, he has some of it remaining for himself after replacing his advances. To vary the form of the theorem: the reason why capital yields a profit is because food, clothing, materials, and tools last longer than the time which was required to produce them; so that if a capitalist supplies a party of labourers with these things, on condition of receiving all they produce, they will, in addition to reproducing their own necessaries and instruments, have a portion of their time remaining to work for the capitalist. We thus see that profit arises, not from the incident of exchange, but from the productive power of labour; and the general

rate of profit is always what the productive power of labour makes it, whether any exchange takes place or not."

§ 6. "The capitalist may be assumed to make all the advances and receive all the produce. His profit consists of the excess of the produce over the advances; his *rate* of profit is the ratio which that excess bears to the amount advanced. But what do the advances consist of?"

He replies to this question by saying: "Whatever of the ultimate product is not profit is repayment of wages."

§ 7. "It thus appears that the two elements on which, and on which alone, the gains of the capitalists depend, are, first, the magnitude of the produce, in other words, the productive power of labour; and secondly, the proportion of that produce obtained by the labourers themselves; the ratio which the remuneration of the labourers bears to the amount they produce. . . . The *rate* of profit, the percentage on the capital, depends only on the second of the two elements, the labourer's proportional share, and not on the amount to be shared."

"We thus arrive at the conclusion of Ricardo and others, that the rate of profit depends on wages—rising as wages fall, and falling as wages rise. In adopting, however, this doctrine, I must insist upon making a most necessary alteration in its wording. Instead of saying that profits depend on wages, let us say (what Ricardo really meant) that they depend on the *cost of labour*." . . . "Nothing is more common than to say that wages are high or low, meaning only that the cost of labour is high or low." . . . "The cost of labour is frequently at its highest where wages are lowest. This may arise from two causes. In the first place, the labour, though cheap, may be inefficient." . . . "The other cause which renders wages, and the cost of labour, no real criteria of one another, is the varying costliness of the articles which the labourer consumes. If these are cheap, wages, in the sense which is of importance to the labourer, may be high, and yet the cost of labour may be low; if dear, the labourer may be wretchedly off, though his labour may cost much to the capitalist. This last is the condition of a country over-peopled in relation to its land; in which, food being dear, the poorness of the labourer's real reward does not prevent labour from costing much to the purchaser, and low wages and low profits co-exist. The opposite case is

exemplified in the United States of America. The labourer there enjoys a greater abundance of comforts than in any other country of the world, except some of the newest colonies ; but owing to the cheap price at which these comforts can be obtained—combined with the great efficiency of the labour—the cost of labour is at least not higher, nor the rate of profit lower, than in Europe.”

The theories of which these extracts give, I think, a fair representation, appear at first sight irrefutable. But when closely examined they will be found to be nothing more than an unsuccessful attempt to clothe in scientific terms the old and perverse view that the interest of the capitalist is the predominant factor in the economic activity of society.

The working classes breed like rabbits, and as the “wages-fund” does not increase at such a rapid rate, wages are kept down to the irreducible minimum, and nothing which the labourers can do will alter this lamentable state of things if they will not restrict the increase of population. The cause of profit is, that labour produces more than is required for its support. The capitalist makes all the advances, and receives all the produce. His profit consists of the excess of the produce over the advance. His rate of profit is the ratio which that excess bears to the advances. We thus arrive at the conclusion of Ricardo and others, that the rate of profit depends on wages—rising as wages fall, and falling as wages rise.

Stuart Mill considered it a great public calamity that wages were so low that the working classes were condemned to perpetual poverty and misery, and he urged upon them in the strongest possible terms the duty of exercising prudence in regard to the increase of population, as the only means of obtaining better wages, although this would, according to this theory, cause an increase of the cost of production. But he remarks naïvely : “When the poor-rate has been kept down, people have been very willing that the working classes should be ill off. Nearly all who are not labourers themselves are employers of labour, and are not sorry to get that commodity cheap.”

It will be observed that Stuart Mill does not adduce anything at all, except the pressing needs of the labourers, in explanation

of the fact that they are willing to produce for the benefit of the capitalist an excess of produce above his advances. He evidently looked upon the profit of capital from the same point of view as a buyer of the produce which the capitalist sells, viz. as an addition to the price of the commodities beyond the cost of production.

A reader who has followed me through my book to this point will at once see the flaw in the "classical" reasoning. The labourers could never have produced an excess for the capital-

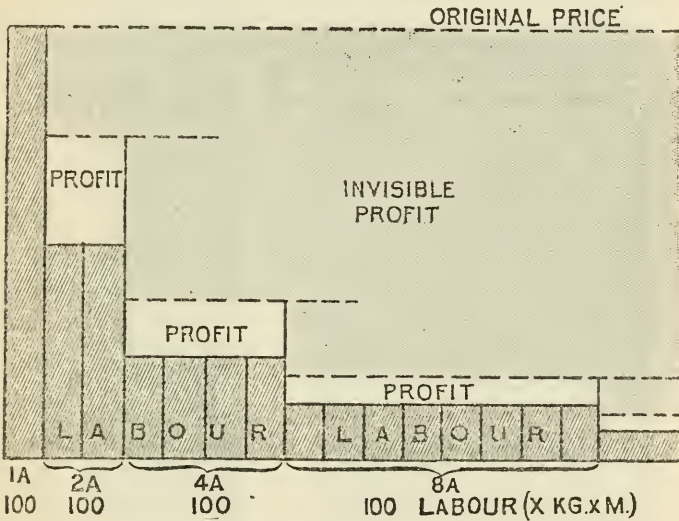


DIAGRAM A.

ists, even if willing to do so, if the employment of capital had not made their labour more productive, by permitting production to be done with less labour. Let us admit for the sake of argument the exploded wages-fund theory; it is clear that the working classes, who are the majority of the consumers, would immediately repay to this fund their double wages, when they earned them by doubling their efficiency, for the quantity of the products which could be sold would also thereby be doubled, like the buying-power of the labourers. Finally the price which is paid for a commodity to the capitalist is lower than the price which must have been paid unless

ORIGINAL PRICE

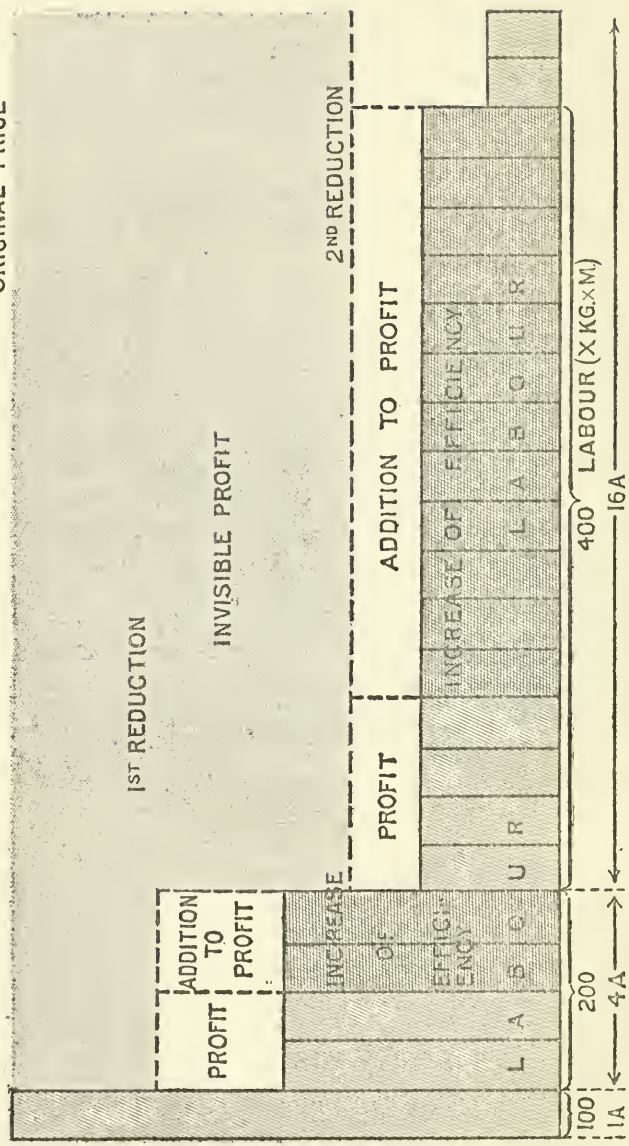


DIAGRAM B.

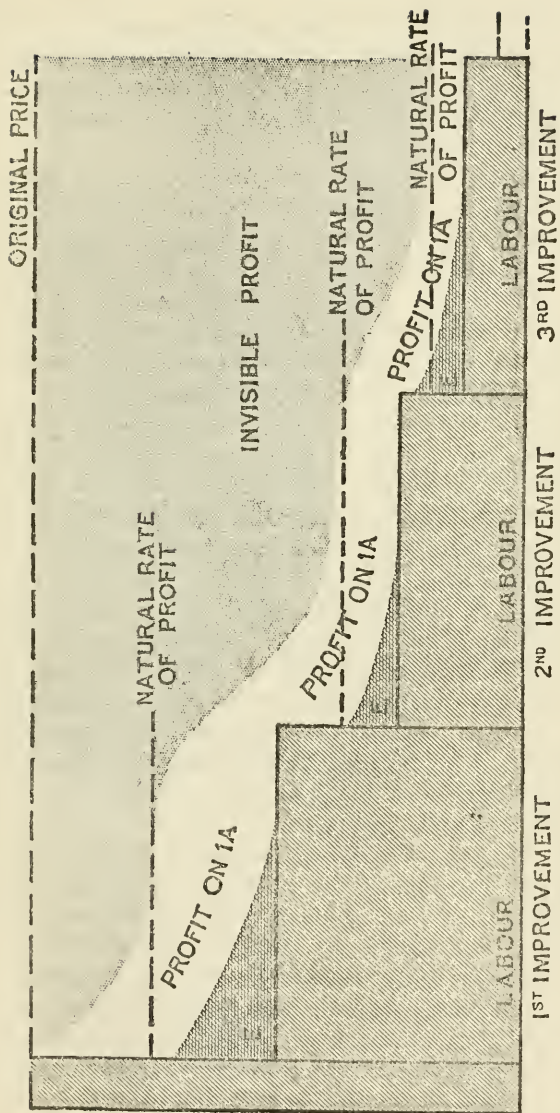


DIAGRAM C.

employment of capital had led to a reduction of the cost of production. Saving of labour is due to the use of the tools, this word taken in the widest sense, in which the capital is invested, and the profit of the capitalist is only a part of this saving. The gain of the consumers, or what I call the invisible profit, constantly increases as a result of successive improvements of the methods of production.

On the basis of the table on page 30 I have prepared the Diagram A which shows that the same sum of labour (x kg. \times $m.$) will produce 1, 2, 4, or 8 A of commodity when the labour cost of 1 A is successively reduced by improved methods to 50 per cent., 25 per cent., and 12.5 per cent. The invisible profit, it will be observed, constantly increases, while the sum of profit is at each stage of improvement the same, as long as an equal sum of labour is employed and wages are on each stage paid at the same rate for an equal sum (x kg. \times $m.$) of energy transferred by the labourers to matter.

Diagram B has been prepared on the basis of the table on page 41, where it is supposed that the efficiency of labour is doubled each time the effectivity of the method is doubled. This diagram shows clearly, that provided the labourers are at all stages of improvement paid at the same unit rate of wages for x kg. \times $m.$ of energy, their daily earnings increase with their efficiency from 1 to 2, 4 and 8, etc., and, thanks to the increased production, the sum of profit of the capitalist is also increased at precisely the same rate, while the production increases as 1, 4, 16, 64, etc., an immense gain to the consumers, because not only does the price of the commodities sink, but the output is greatly increased.

Finally, Diagram C has been prepared to show the process by which an increase of the efficiency of labour is obtained.

Workpeople are by instinct and inclination exceedingly conservative, and dislike all changes in the methods of production, which nearly always involve other processes and other movements by the labourers than were required of them when the old method was used. Lack of practice will therefore as a rule prevent them from at once doing the new kind of work with a high degree of efficiency, even if they were inclined to exert themselves greatly for that purpose.

As the new method usually represents a considerably larger

capital per labourer than the one which it supersedes, it is, however, essential for the capitalist to obtain more efficient labour than sufficed with the previous method. His only means of obtaining this is to pay the labourers better than before. The fortunate possessor of a new and greatly improved method of production need not as a rule immediately reduce his selling price so much as his reduced cost of production might enable him to do. For until the new method has been so generally introduced that production on the old method has been entirely superseded, he will be able to obtain a considerably higher price than is possible when all his competitors use the same method or equally good ones.

Diagram C has been constructed to show cost of labour at each stage of improvement, while the abscissæ do not represent quantity, but time—years for instance. In the beginning, after the introduction of a new and better method of production, the employers who use it, because obtaining a high price for the product, are able to pay higher wages than the average unit rate, which is indicated by E, or extra wages, on the diagram. The labourers are stimulated by these extra wages to greater exertions, and thereby learn gradually to execute their work more efficiently. After a while competition with other labourers will compel them to submit to the ordinary unit rate of wages; but owing to their higher efficiency they will earn proportionally more per day than those labourers who were employed on the old method.

The capitalists who still use the old method will be compelled by competition with the new method to sell their products at a constantly declining rate of profit, and will at last be obliged to give up the struggle. When that has happened the entire production will come to be conducted on a new level. The rate of profit per unit of product will be permanently lowered; but provided the labourers are paid at the ordinary unit rate of wages, their daily earnings will be proportionate to their increased efficiency, and the sum of profit will increase with the quality of production at the same rate as the increase of the daily earnings of the labourers. This intimate relation between the sum of profit and efficiency of labour is demonstrated in Diagram B, where an addition to profit is shown to be determined by proportionate increase of efficiency of labour.

If wages are not paid in accordance with efficiency, no power on earth will compel the labourers in the long run to increase their rate of efficiency beyond their actual wages, or to the utmost limit ; and employers who do not recognize this fundamental truth really mulct themselves in trying to keep wages unduly low.

Not only is the famous *iron law of wages* of Ricardo, which Stuart Mill adopted, *that the rate of profit depends on wages—rising as wages fall, and falling as wages rise*, not true, but the very reverse is, as I have shown, the true relation between profits and wages.

The rate of profit per unit of product sinks with successive improvements of production which lead to a constantly increasing saving of labour ; but as the unit rate of wages remains in the long run the same on all stages of improvement, the sum of profit increases in the same proportion as the efficiency of labour and the daily earnings of the labourers.

Of the wages-fund theory, and the question of population in relation to the supply of food, I shall have something to say later on, in another connexion.

That the classical teachers of Political Economy could adopt so entirely false and misleading theories on the relation of wages to profits, can only be explained by the peculiar economic conditions which prevailed in England at the period when their books were written. The working classes of England, right up to the time of the publication of the *Principles of Political Economy*, as I have shown in a previous chapter, lived under wretched conditions. Farm labourers' wages were incredibly low, and they were housed and fed more like pigs than human beings. The unjust and irrational English system of land tenure was mainly responsible for this misery, and is still a blot on the social organization of Great Britain and Ireland. In the industries the improvements of the methods of production and the rate of capitalization had not yet reached such a high stage that a marked improvement of the efficiency of labour had become a matter of paramount importance to employers. Although industrial wages were higher in England than on the Continent, they were still very low ; and as a result of the prevalent lack of systematic management in the mills and factories, the increase of efficiency of

labour was a slow process. At the same time as the earnings of the working classes therefore were unsatisfactory, the special circumstances of England compelled them to put up with bad housing at exorbitant rent. The absence of compulsory school education kept the working classes in a bondage of ignorance. Who could wonder at their ignorance and the low standard of morality which prevailed among them? At a time when the scarcity of food in Europe had not yet been relieved by large importations from oversea countries, the outlook for the working classes must have appeared almost hopeless to writers who had completely failed to grasp the problem of wages in its relation to efficiency of labour.

It would have been superfluous to devote so much space to demonstrate the misconceptions and errors of the classical theories of wages and profit had not these so largely contributed to the formation of the views of Karl Marx. They entered, of course with necessary alterations to suit his purposes, into *Das Kapital*, by Marx; and hence the fundamental errors of the classic writers have exercised, and still exercise indirectly, the most fatal influence by the strong hold which they have acquired over the masses. The doctrines of socialism have to a great extent determined the policy of the trade unions during the last generation, and the totally false theories on the laws which govern wages, which Stuart Mill and the other writers of the same school entertained, have become petrified as the dogmatic beliefs of millions of the working classes in the New as well as in the Old World. There is nothing which during the last generation has contributed to retard the advance of the efficiency of labour, and consequently also of wages, so much as these false opinions of the Social Democrats, because they have become almost unassailable by argument, being held by their adherents with the unreasonable fervour which is characteristic of all dogmatic beliefs.

Karl Marx lived as an exile in a back street of London instead of staying in his native country to do his best to cause a revolution of the political and social conditions of the German working classes. He wrote a ponderous and, if the truth must be told, a terribly tedious book, *Das Kapital*, which is really, if I might borrow a musical term, nothing but a transposition into a different key of the erroneous teachings of the classical

school of Political Economy. This is thoroughly characteristic of the two nations : the English are the inventors, the Germans take their inventions, develop and systematize them. If, as in this case, the start has been made in a wrong direction, the unhappy result must be that of Marx, who ended in a quagmire of illusions without having common sense enough to retrace his steps in time.

Das Kapital begins with a theory of value, which is, according to him, determined by the sum of human labour which is required for the production of the various goods or *Waaren*. The value of a commodity corresponds to the value of every other commodity as the necessary time of labour for its production to the necessary time of labour for the production of the other commodities.

This is the classical theory of value, of which Stuart Mill said :

“ Happily, there is nothing in the laws of value which remains for the present or any future writer to clear up ; the theory of the subject is complete : the only difficulty to be overcome is that of so stating it as to solve by anticipation the chief perplexities which occur in applying it.”

Subsequent investigations of this problem have, however, irrefutably demonstrated that the deductions which Stuart Mill and the other classical writers made from an incomplete and erroneous analysis of the facts which appertain to this subject were entirely wrong.

It is quite true that the various classes of goods, of which the supply may be increasing or restricted at will by the producers, are ordinarily exchanged at prices which roughly correspond with their relative cost of production, or rather, cost *plus* an average profit. But this does not happen because the human labour which has been spent upon the production of the goods gives them their value. It is the demand of the consumers, or the price which they are willing to pay, not the labour of the producers which gives their value to the different goods. If the supply of a commodity is in excess of the demand, the capitalist producers must sell at a price which leaves them less than an average profit, and the reverse happens if the supply falls short of the demand. In both cases the capitalist producers try to adjust the supply to the demand as rapidly as possible.

In proportion as they are successful in this effort of adjustment, the various commodities will sell at a price which leaves as near as possible an average profit, and the commodities will therefore also exchange in about the same proportion as their varying cost of labour.

According to Marx, all goods exchange for their equivalent, i.e. for quantities of other goods which represent in their production equal sums of human labour, and he classifies human labour among the goods or *Waaren*.

“This special commodity (*Waare*), the working power, must now be more closely considered,” he says. As all other commodities, it possesses a value. How is it determined?

“The value of working power as of all other commodities is determined by the necessary time of labour which is required for the production, including the reproduction of this specific commodity. As far as it has value, working power or labour represents itself only a certain quantity of average social labour which has been crystallized (*vergegenständlicht*) in it. The power of work exists only as a faculty of the living individual. The production of it therefore presupposes the existence of the individual. Given the existence of individuals, the production of working power consists in its own reproduction or upkeep. To maintain itself, the living individual needs a certain quantity of food. The necessary time of labour to produce working power is therefore the same as the time of labour which is necessary for the production of these foodstuffs, or the value of the power of work is the value of the foodstuffs which are necessary to maintain its possessor. The power of work, however, only realizes itself when it is sold, becomes a reality only in labour. By its use, the labour, a certain quantity of human muscular fibres, nervous substance, brain, etc., is worn away, which must be replaced. This increased expenditure requires increased income. When the possessor of the power of work has laboured to-day, he must be able to repeat the same process to-morrow under the same conditions of strength and health. The quantity of foodstuffs must therefore also suffice to keep the labouring individual in his normal bodily condition. The natural demands, such as food, clothes, heating, housing, etc., vary according to climatic and other natural peculiarities of a country. The extent of the so-called

necessary demands as well as their mode of satisfaction are, on the other hand, an historical product, which is therefore largely determined by the stage of culture of a country. It depends to a large extent upon the conditions under which free labourers have been accustomed to live, and the standard of life which they demand. Unlike other commodities, the determination of the value of the power of work contains thus an historical and moral element.

“The possessor of the power of work is mortal. If the appearance of labour on the market is to be a continuous one, as the continuous transformation of money into capital presupposes, the seller of labour must make himself eternal, as each living creature becomes eternal by breeding. The labourers who are lost to the market by wear and tear and by death must for ever be replaced by at least the same number of new labourers. The quantity of foodstuffs which are necessary to produce power of work include thus the foodstuffs for those who are to replace them, i.e. for the children of the labourers, in order that the peculiar race, the possessors of the power of work, may be eternally maintained on the commodity market.

“To modify the common nature of man so that it may reach adaptability and practice in a special branch of labour, and becomes a developed and specialized power of work, a certain training or education is required, which costs a larger or a smaller sum of equivalents of foodstuffs. The cost of education varies according to the more or less developed character of the power of work. This cost of education which is a minimum for common labourers is equivalent to the values which have been consumed in their production.

“The value of the power of work is composed of the value of a certain sum of means of subsistence. It varies, therefore, with the value of these means, i.e. the quantity of the time of labour which is required to produce them.

“A part of the means of subsistence—for instance, foodstuffs, heating materials, etc.—are consumed afresh every day, and must be daily replaced. Other means of subsistence, such as clothes, furniture, etc., are worn out during a longer time, and need therefore only be replaced during a longer time. Goods of one kind must be purchased or paid for daily, others weekly, quarterly, and so forth. However the sum of these

expenses are distributed, for instance, during a year, they must be covered by the average income of one day with another. Let *A* stand for the goods that are daily required for the production of a power of work (*die Arbeitskraft*), *B* for the goods which are required weekly, and *C* for the goods which are required each quarter, etc.

“Then the average of these goods will be :

$$\frac{365 A + 52 B + 4 C + \text{etc.}}{365}$$

365

“Let us assume that the quantity of goods which are required to produce this *Durchschnitts-Tag*, or average day, represent six hours of average social labour ; if so, there is represented daily in the power of work one-half day of average social labour, or the labour of one-half day is required to produce daily the power of work. This quantity of labour which is required for its daily production determines the daily value of the power of work, or the value of the power of work which is daily produced. If a half day of average social labour is likewise represented by a quantity of gold of 3s. or a Thaler, then a Thaler is the price which corresponds with the daily value of the power of work. If its possessor offers it for sale at one Thaler, its selling price is equal to its worth, and on these suppositions the possessor of money, who is eager to turn a Thaler into capital, pays the value for the power of work.”

(The last paragraph is a typical example of the long-drawn deductions which Marx constantly used.)

“The ultimate level or minimum level of the value of power of work is determined by the value of a quantity of goods without a daily supply of which the possessor of the power of work, man, cannot renew his process of life, consequently the value of the physically indispensable means of subsistence. If the price of the power of work falls to this minimum, it falls below the value, for it can then be maintained and developed only in an insufficient manner. The value of each commodity is, however, determined by the time of labour which is required to supply the same in normally good quality.”

. . . “The use of the power of work is the labour itself. The buyer of the power of work consumes it in making the seller do labour. The last-mentioned becomes therefore *actu*

realized power of work, or labourer, which he was previously only *potentia*. To convert his labour into goods he must above all produce objects which have a value in use (*Gebrauchswerthen*), things which satisfy demands of some kind."

For production Marx explains that three things are required: raw materials, machinery and other means of production, and labour. He makes a master cotton spinner the representative of the capitalist. When he buys in the market 10 lb. of cotton for 10*s.* this is equal to the value of human labour which has been materialized in this quantity. If the wear and tear of the machinery, etc., is 2*s.* a day, the raw material and wear on machinery represent 12*s.*, which is equal, in his terminology, to 24 hours of labour, and consequently two days of labourer will be represented in the yarn to be spun from 10 lb. of cotton. These two days or their equivalent in money form part of the value of the cotton yarn. In the production of this yarn the spinner makes use of the power of work which he has purchased; and Marx continues:

"By the sale of the power of work it was assumed that its daily value was = 3*s.*, and that in this sum is materialized six hours of labour, which sum of labour is required to produce on an average the daily means of subsistence of the labourer. When the master spinner changes in one hour of labour 1 $\frac{2}{3}$ lb. of cotton into 1 $\frac{2}{3}$ lb. of yarn (the figures are quite arbitrary—note to *Das Kapital*) the result of 6 hours of labour will be to change 10 lb. of cotton into 10 lb. of yarn. During the continuation of the spinning process, the cotton absorbs therefore 6 hours of labour. This time of labour is represented by a gold quantity of 3*s.* By the spinning a value of 3*s.* is added to the cotton.

"In the total value of the product of 10 lb. of yarn 2 $\frac{1}{2}$ days of labour are embodied (*vergegenständlicht*), 2 days in cotton and wear of machinery, half day's labour absorbed in the process of spinning. This time of labour is equal to a sum of money of 15*s.* The price that is adequate to the value of the yarn is therefore 15*s.*, and the price of 1 lb. yarn 1*s.* 6*d.*

"The capitalist is surprised. The value of the product is equal to these advances, which have not been increased in value (*verwerthet*)."

"The price of the yarn is 15*s.*, which is equal to what has been paid out in the commodity market." . . . "Let us look

closer at the matter. The daily value of the power of work amounted to 3s., because one-half day's labour is materialized in it; that is to say, because the means of subsistence which are required for producing the power of labour cost half a day's labour. But the past labour which is hidden in the power of work and the living labour which it can yield, its daily cost of maintenance and its daily consumption, are two quite different quantities. The first determines its *value in exchange*, the second determines its *value in use*. The value of the power of work, and turning it into value in the process of labour, are two entirely different quantities. The capitalist had this difference of value in his mind when he bought the power of work. Its useful quality to make cotton yarn or boots was only a *conditio sine qua*, because labour must be expended in a useful form to build value. But what was decisive was *the specific value in use of this commodity, that it is a source of value and of more value than itself*. This is the special service which the capitalist expects from it, and he thereby proceeds according to the eternal laws of the exchange of commodities. In reality the vendor of power of work as the seller of other commodities realizes its value in exchange and parts with its value in use. He cannot obtain the one except by giving away the other. The value in use of the power of work belongs as little to its seller as the sold oil to the grocer. The possessor of money has paid the daily value of the power of work; to him belongs, therefore, its value in use during the day, the labour of the long day. The circumstance that the daily maintenance of the power of work only costs half a day's labour, although the possessor of the power of work can work or do labour a whole day, and that therefore the value which its use creates during a day is double as great at its own daily value, is a special luck for the buyer, but not at all an injustice to the seller.

“ Our capitalist has foreseen the case, which makes him laugh. The labourer finds in the mill the necessary means of production not only for a work process of six, but of twelve hours. If 10 lb. of cotton absorbed 6 hours of labour and was changed into 10 lb. of yarn, 20 lb. of cotton will absorb 12 hours of labour and be changed into 20 lb. of yarn. Let us consider the product of the prolonged day of labour. In the 20 lb. of yarn

are now manifested 5 days of labour, four in the raw cotton which is consumed and in the wear of machinery, and one absorbed by the cotton during the process of spinning. But the gold expression of 5 days of labour is 30s. This is also the price of 20 lb. of yarn. The pound costs as before 1s. 6d. The sum of value of the goods which were thrown into the process was on the other hand 27s. The value of the yarn amounts to 30s. The value of the product has been augmented by one-ninth part above the value which has been advanced for its production. Thus 27s. have changed themselves into 30s. They have produced a surplus value of 3s. The trick has at last succeeded. Money has been changed into capital."

Colloquially many terms are employed which are derived from metaphors, and which are used half in earnest, half in jest. As a rule this habit of speech does not do any harm. When a penniless young man says, for instance, "My working power is my capital," he is not as a rule misled by his own words, and should he act on the erroneous supposition that his working power will stand him in stead of accumulated capital, he is sure to experience sooner or later a somewhat rude awakening. Unfortunately men of science, when desiring to subject problems to a serious analysis, also frequently use terms which are derived from analogy or metaphors, instead of basing their terminology upon an exact study of the factors which together make up the problem that is to be examined. In economics it is impossible to reach a true perception unless one draws a clear and strongly defined line which divides man, whether he is a capitalist or a wage-earner, from the external matter upon which he spends his productive energy as well as from the products of this energy. To classify labour itself among commodities, or *Waaren*, as Marx did, is to enter gratuitously into a bewildering maze of misunderstandings from which it is quite impossible to find one's way out.

Labour has its value just as much as the commodities which are produced by it, but neither in the one case nor in the other is the value determined by the cost of production. The value both of labour and of commodities is determined by the ratio at a given time and place between supply and demand. It is, however, necessary to bear in mind that the value of labour,

as expressed in the wages or daily earnings of the labourer, contains two absolutely different elements, which may be shortly defined as the unit rate of wages and the efficiency rate of wages. The unit rate, which is always and everywhere the same, is the whimsically small quantity of commodities, or their value, which the first man could produce in a day with his naked hands unaided by capital, and with the very small sum of effective labour which his low rate of efficiency placed at his disposal. Actual daily wages of to-day are a multiple of this unit rate and the rate of efficiency of the modern labourer. He obtains the same pay for each 100 kg. \times m. of energy transferred to matter as the first man could make for himself, but he earns many times more in money per day because of his relatively high rate of efficiency, and he derives as a member of society the benefit, in the shape of an invisible profit, that he may purchase for his money wages a constantly growing quantity of commodities, because their price is steadily falling as a result of constantly improved methods of production, and of growing capital accumulations.

Modern labourers could not produce for their subsistence in a day, much less in six hours, without the aid of the existing capital commodities to the value of three shillings. And the theory of Marx that the labourers produce in a certain part, for instance six hours, their means of subsistence, and that their labour in the rest of the day is therefore *ausgebeutet*, or exploited by the capitalists who pay them only the equivalent for the labour of six hours, is therefore sheer nonsense. He goes on to explain that at each subsequent stage of technical development the rate of exploitation grows because the cost of the commodities which are required for the maintenance of the labourers is reduced by the better methods, and therefore also the value of labour (sic!). He was a keen logician, and had he not been entangled in his pet theory of the *Mehrwert*, or surplus value, of which, according to him, the proletariat was robbed, he would at last have recognized that the rate of profit per unit of product is constantly sinking to the benefit mainly of the working classes.

Oppressively tedious as *Das Kapital* is, it is nevertheless well worth reading, owing to its many lurid illustrations of economic conditions in England at the time when it was written.

The employers did not succeed in exploiting their labourers in the sense of Marx, partly because they obtained only labour of a comparatively poor rate of efficiency, and partly because their mutual competition compelled them to sell their products cheaper in proportion as they actually succeeded in compelling their labourers to work below the proper rate of wages. But they did their very best to enforce barbarously long hours of labour without the least consideration for the health of the labourers; the excessive employment of child labour with the purpose of depressing wages of grown-up people, and particularly the inhuman treatment to which the children were subjected, will for ever be a disgrace to England of that period.

Our sympathies must go out to a sincere friend of the working classes who saw all this misery and, believing it to be an unavoidable accompaniment of capitalism, sought relief from his fiery anger in a fantastic theory which he fondly believed would be the complete destruction of private capitalism.

The employers of England at the middle of last century, whose lack of insight into the problem of wages was on a par with their callous egotism, must therefore be held mainly responsible for the great calamity that a book so full of venomous hatred as *Das Kapital* has become the Bible of the working classes of the world.

Employers of to-day suffer for the sins of the employers fifty years ago, and socialism, which has developed during two generations along the false lines laid down by Marx, has added immensely to the troubles and perplexities by which those who manage productive activity are at present surrounded. The immeasurable loss which is caused by the never-ceasing strife between capital and labour, and by the lamentably low rate of efficiency, falls, however, mainly upon the working classes themselves and upon society as a whole, and only to a much smaller extent, and indirectly, upon capital and employers.

Efficiency of labour is a plant of exceedingly slow growth, as it depends largely upon intensity of work which presupposes good feeling; the working classes are therefore unable to increase their efficiency otherwise than step by step. When they are a little better paid they may reach a small step forward in efficiency because they can afford a somewhat more nourish-

ing diet; and if the employers are wise and reward this increase of efficiency by paying proportionately better wages, the diet may be still improved, which again places the labourer in a position of working with greater intensity.

But it is a common human trait that we all wish to exert ourselves as little as possible, and wages being fixed according to average efficiency, they have risen only by very slow degrees, because employers as a class have always until quite recently been very short-sighted in this matter, and have not as a rule been inclined to increase the daily wages except under compulsion. There is therefore no reason to wonder that the efficiency of labour has upon the whole remained very low; it is more surprising that in spite of all checks it has been steadily improving.

The introduction of piece payment soon after the beginning of the industrial revolution was a great misfortune, for the rates were fixed much too high, and therefore a readjustment was a necessity, and the lowering of piece rates continued unfortunately during a long period. This process of cutting rates, necessary though it was, gave the working classes a keen feeling that they were always mulcted if they exerted themselves much above the average. Who can be surprised that they came to look upon it as a great injustice which was perpetrated upon them, or that the trade unions considered it their principal business to put a check to the constant policy of the masters to cut piece rates whenever the earnings of the labourers were more in a day or week than they considered reasonable?

The trade unions early began their fight for maintaining piece rates, and as one of their weapons in this fight, besides strikes, they soon adopted the policy of enjoining upon their members not to exceed a certain maximum of work per day. The trade unions are not at all inclined to acknowledge openly that they have followed this policy, and it may be that they have never in so many words ordered their members to act in accordance therewith. But there is, nevertheless, not the slightest doubt that the members have shaped their action, consciously or unconsciously, in this spirit. In each "shop" a standard of work has been adopted, more or less forcibly, which acts as a barrier against any attempt on the part of the employer to cut piece rates. This passive resistance of the

working classes against attempts to force the speed of work beyond a certain point is a universal phenomenon, to be met with in every part of the world. It has recently been carried to that caricature which has been nicknamed "ca'eanny." This attitude of the working classes, which is diametrically opposed to the spirit of sport, has been a most powerful hindrance to any rapid advance of the efficiency of labour.

At a time when some at least of the employers began to perceive that it might be to their own interest to revise a wages policy which had been accompanied by such unhappy results, and when it had begun to be generally acknowledged that piece rates, when properly fixed, ought not to be changed unless a material change was made at the same time in the processes of manufacture, a new, powerful, and very insidious element was introduced into the relations of capital and labour by the almost universal dissemination among the working classes of the theories of Karl Marx, in a popularized form.

Until that time their attitude of passive resistance had been directed by an instinctive feeling, for which they could not fully account, that a great wrong was being done to them. But here comes a learned man who has written a book as big as that of any professor, and who tells them in plain and undeniable words, that Capital, with a big letter, exploits the poor working classes, or the proletariat, as they prefer to style themselves, by robbing them of the surplus value of their labour. Then why on earth should the labourers exert themselves to produce this surplus value? If they do, some of their class are thereby thrown out of work. To increase the efficiency of labour is a crime against their class. The less work each man does, the fewer will be those of their comrades who must be idle and penniless, owing to the utter lack of proper organization of the present system of private ownership of capital.

The working classes have in full earnest believed that they have been exploited and cheated of their just reward by the reduction of piece payment rates, and they have always considered the time wages which they obtained as monstrously insufficient. To such people the theory of Karl Marx of the surplus value must have appeared as a piercing ray of light which suddenly dispels all darkness; and they believed that

they understood for the first time clearly the cause of the glaring injustice of this world, to find an explanation of which they had so long been groping painfully about in the dark.

Let us take in hand the wonderful lamp of Aladdin. In the twinkling of an eye we have socialized all "means of production," and we also easily surmount such a trifling difficulty as this, that concerns which are worked by the State or municipalities are not generally as well managed as in private ownership. What will be the effect upon wages of our peaceful revolution? Unless the industrious and efficient labourers are to be mulcted for the benefit of the lazy and inefficient ones, wages must still be paid in proportion to efficiency. But, it will be objected, wages may be raised by distributing among the labourers the profit which the capitalists have squeezed out of them. Here it is that the mistake comes in. The profit on capital is only apparently the property of the owner of the capital in this sense, that he may do with it what he pleases. First of all, a large share of the gross profit in the balance sheet is not really profit at all, because it must be spent upon maintenance of the plant. And secondly, of the real net profit the greater part must be set aside as fresh accumulation, unless the capitalistic production in its entirety is to come to a standstill. True, the individual capitalist may consume the whole of his profit for his own enjoyment. But if many, not to speak of the majority of them, did this, they would very soon find that their profits had disappeared altogether. And if society stepped into their place and appropriated all means of production, it would be compelled to do the same as the hated capitalists have always done. By far the greater part of whatever profit there was on the social undertakings would have to be used to maintain and increase the accumulated capital of the community. Only an insignificant part of the profits would at best be available to be paid out as an addition to wages.

No, we had much better restore the rusty old lamp to its place, and take things as they are, not as Marx and his dogmatic adherents might wish them to be. The secret of wages is, that they are in the long run paid according to efficiency, so that the payment for x kg. \times m . of effective work performed has always and everywhere a tendency to equality, and that

profit is a part only of the saving of labour which is effected by using the tools in which capital is invested. The consumers buy their commodities at a constantly declining price. When things are really ordered in this manner, the only way in which the labourers can permanently better their lot is to yield a more efficient labour, provided that they receive proportionately higher wages. And this is where the growing demand for labour comes in to the great advantage of the working classes: the successive improvements of the methods of production necessitate a constantly growing rate of capitalization, and if the percentage of profit on the larger capital is not to dwindle to near the vanishing point, it is a *conditio sine qua non* for the employers to find labourers who are willing and able to do their work with a higher rate of efficiency. To obtain this they have only one means, viz. to pay proportionately higher wages.

Since the days of Marx the rate of capitalization has risen steadily; in recent years, and in some branches of industry, it has grown to be so enormous that it is simply a life and death matter for these industries to secure efficient labourers by a liberal payment.

My theory of the relation between wages and profit has the advantage which that of Marx had not, that its truth may be demonstrated by facts taken from life itself.

Not even the most modern and highly capitalized industry can afford to pay permanently higher wages than correspond to the efficiency of their labourers; and the theories of Karl Marx, which the Social Democrats of all countries try to realize, have actually retarded the advance of the efficiency of labour to such an extent that it means a loss to the working classes, of Europe alone, of a sum which is annually probably larger than the annual cost of the present gigantic war. I base this calculation upon the assumption that if efficiency of labour had been only moderately increased, each one of the hundred millions of wage-earners in our continent would have been worth on an average, and would have obtained, £56 5s. higher wages per annum than they are to-day receiving. Remember that this addition to the earnings of the working classes would not have been accompanied by a proportionate increase of the cost^r of production.

That they must go without it is therefore a dead loss to society as a whole, and especially to the working classes, who, to obtain this enormous increase of their income, need not work harder, or longer hours, but only more than at present with their will and intelligence. It would, in short, be the great prize of a moral victory over their slovenliness, laziness, and negligence. Unfortunately, instead of trying to win this prize, they follow ideas of stupid hatred, inculcated into them by a man who wrote a big and tedious Bible of hate more than sixty years ago. Truly, ideas like books have sometimes very strange fortunes; whether they are bad or good does not make much difference. Anyhow, the working classes will have to suffer for many years to come from the virulent poison with which *Das Kapital* has filled their brains.

CHAPTER XVI

THE GREATEST OF ALL INDUSTRIAL PROBLEMS : THE MANAGEMENT OF LABOUR (*concluded*)

THE happy management of labour, when one person is the employer who hires other men or women to work for him at a wage, although involving great intellectual and technical difficulties, like all other relations between man and man, mainly depends upon the moral attitude of the parties to each other.

The influence of our actions, be they good or bad, lasts for ever, only, like the rings in the water where a stone has been thrown in, it becomes gradually weaker and at last cannot any longer be distinguished ; but it is there nevertheless. The law appears to prevail in a mysterious manner in the moral world, that the wrongs committed by man, whether done thoughtlessly or of evil purpose, must in the end be atoned for. If retribution does not overtake the wrongdoer himself, posterity must somehow or other pay the penalty for the deed. This is the deep truth to which the Greeks gave expression in their wonderful poetic manner in the myth of the goddess Nemesis who, though slow, always overtook crime. " I, the Lord thy God, am a jealous God, visiting the iniquity of the fathers upon the children unto the third and unto the fourth generation of them that hate me."

That people who have not themselves done the wrong shall thus be punished for the sins of their forefathers, does not at first sight appear either just or reasonable. But remember that the living generation, while suffering for the mistakes or sins of past generations, also enjoys the blessings of their good deeds, and has the advantage of whatever progress in evolution they won by their labour. Humanity may be likened to a big old tree which has its roots in the far-away past, and of

which the individuals, who form the living generation, are only the leaves of the present summer. Moreover, the growth of the tree is regulated by the supreme law of nature that cause and effect are the inseparable links of an eternal chain of happenings.

In all past ages the majority of mankind, the working classes, have been doomed by their poverty to incessant toil for the few, the upper classes. Their reward was the scantiest, and they were always badly treated. They had no social or political rights: the duty of obeying was their only inheritance. This lamentable condition was, as I have repeatedly explained, the unavoidable consequence of the low productivity of human labour before the powers of nature had been taken into the service of man, and before capital accumulations had become so large as to require a more efficient labour for their utilization.

Through about six thousands of years after the introduction of metals for tool-making, the ideas of man had grown. The evolution of these ideas gradually paved the way for that fundamental change of the productive methods which occurred at last in the second half of the eighteenth century, through the remarkable English Industrial Revolution. In the period of about 150 years which have since elapsed, invention has followed invention, and together they have given humanity command over nature to a most wonderful extent. For the first time since the appearance of man upon the earth, the productive capacity of our race has been so much increased that a vista opens to our view of the possibility of reaching a stage of evolution under which there will be a sufficiency, if not abundance, of good things for everybody—for the working classes as well as for the upper classes, for whom sufficiency has hitherto been an exclusive privilege.

This conquest of mind over matter, itself the fruit of ideas, has changed from top to bottom not only the methods of production, but the mode of existence itself, and it has given rise to the most luxurious growth of new and fertile ideas. These are so rich, so varied, so prolific, that it is like the tropical forest, where they say that vegetation is so powerful as to almost prevent man from penetrating. Nobody can say with certainty whither all these new ideas are ultimately taking us. They are not at all restricted to the material side of existence,

but abound also in the fields of ethics and morality, as well as in that of abstract speculations and in arts. Novel and striking forms of thought meet us in every direction.

In all this conflicting diversity one idea stands out boldly, and not to be mistaken, the idea of the right of all individuals to the free development of their personality. This is an entirely modern conception. In proportion as it permeates all classes, and is consciously adopted by the whole of our race, it will tend to alter most profoundly man's views of existence and his attitude towards it.

This idea is most decidedly not compatible with the perception of past ages, that the majority, the working classes, were placed in the world for no other purpose than to serve the minority. The Industrial Revolution sounded, if it had been properly understood, a peal of triumph at the abolition of the actual bondage to which the working classes had been subjected, because it initiated production on so vast a scale that ultimately it can find no sufficient outlet except in the consumption by the masses, neither can it reach its logical maturity unless they can be induced to exert themselves properly for that purpose.

But the signs of the times, the *mene tekel* that should have told the upper classes that a new epoch was being ushered in, were not at all understood at the beginning of the Industrial Revolution, nor were they generally understood by the employers of labour during the four subsequent generations. This lack of intuition was fatal, for the employers continued to treat their labourers in the spirit of past ages, as if they were made of a different and inferior stuff. Against this treatment the labourers have at last, during the present generation, revolted. At the same time the conception was originated by the most far-seeing of the employers, and is rapidly becoming general in the entire class of employers, that they are, together with their labourers, the servants of society, and not "masters" in the old sense of this word.

If an employer in our time wishes to be a really successful manager of labour, he must start from the knowledge that his labourers are personalities, and that they demand to be treated as such. He must not try to interfere with their personal convictions or private life any more than he would tolerate

interference on their part in his private affairs. And much more is needed; for he must feel in his heart that this is a good thing in itself, and that it marks a very, very great step forward in human culture. But he must also steel himself to meet with many and disheartening disappointments.

Discipline is indispensable when many people are to work together for a common purpose. In some ways the task of enforcing discipline has become easier because employers and labourers meet as equals, and the authority of the former is restricted to the place of work and the hours of labour, while, on the other hand, it has also been made enormously more difficult. The labourers as a class are in many respects still like children, and the great change in their status is so recent, and has come so suddenly, that they feel their new dignity with an intensity which frequently takes quite provoking forms of expression. Many times the labourers, or, to be more strict, their representatives the trade unions, behave more like naughty children who have attained the somewhat troublesome hobbledohoy age than like reasoning and grown-up people.

If the employer is a wise man he does not take these outbreaks for more than they really are, a passing phase in the mental development of the working classes; but the many absurdities to which he is far too often exposed by his labourers may sorely try his temper.

The main thing to strive for is to try to infuse into the labourers something akin to the spirit of the games of sports where every one of the team gladly submits to the orders of the captain, and each does his very best for the victory of his side. This is the right way, instead of imitating the hard-and-fast drill of the barrack yard. Fines may be necessary, but should be used as sparingly as possible. To stimulate this spirit of competition among a large body of labourers it is necessary that they should be treated with strict justice, and that wages should be fixed, as far as the rules of Trade Unionism will permit, on such a system that each labourer feels that when he exerts himself to increase the efficiency of his labour, he receives immediately a full reward in a proportionate advance of his wages. I need not here repeat the arguments by which I have demonstrated that higher wages, when proportional to higher efficiency, are of equal advantage to employer and

labourer alike. The employer who follows this policy of fostering increased efficiency by rewarding it, must, however, in order to be ultimately and not only temporarily successful, scrupulously refrain from using this increase of efficiency as an opportunity to reduce piece rates. If he does, the labourers will at once take fright and cease to exert themselves for a further improvement of their efficiency. When the work has reached a certain point of intensity, the employer must also voluntarily shorten the hours of labour if his aim is to obtain a still higher level of efficiency.

Enlightened self-interest, as well as a real concern for the people who work on his behalf, should prompt the employer to be constantly on the look-out for improvements which may be made in the arrangement of the workplace and in the work itself, with a view to make the labour easier and more agreeable, and the surroundings as cheerful as the nature of the business will permit.

Incidentally, an intelligent working man of Christiania told me the other day that he was compelled to live on bread-and-butter for his dinner all the week, because he was a bachelor and there was no decent eating place near the works where he was engaged. I look upon it as a serious negligence when the employers fail to take steps to secure for their labourers an opportunity of feeding well. How would they themselves like, I wonder, to have only bread-and-butter for their dinner all the week-days, and how can they expect to obtain really energetic work from labourers who must be content with such a poor and in the long run unwholesome diet? I remember a friend of mine telling me of a visit to a German foundry where they produced heating radiators as a speciality. He was struck by the almost frightful intensity of the work, to which the manager replied: "Sie sind auch gut gefüttert"—they are exceedingly well fed. I also remember once reading a description of an English racing stable. The visitor made a remark upon the expensive feeding of the horses. "I would give them gold if I thought it was good for them," was the reply of the trainer. These two anecdotes are given to illustrate my meaning.

The *Wohlfahrtseinrichtungen*, or arrangements for the welfare of the employees, which many of the big German industrial

firms have instituted, as well as the garden city of Messrs. Lever Brothers at Port Sunlight, and similar British institutions, are in many respects admirable. But it has struck me, when visiting them, that there is something indefinable of condescension about them, rather reminding the visitor of the air of a nursery-room for good children. I am inclined to believe that institutions of this character, however good the intentions may be, do not always attain fully the objects of their founders, because of the suspicion among the labourers that they pay for it themselves, after all, and the feeling they may have of being "regulated" when out of the mill as well as when at work.

Give the labourers as high pay as possible, and let them do with the money as they please. This should be the leading principle in the management of labourers. But good housing and good food are so essential, not only to the well-being of the labourers as private individuals, but also to their capacity of doing good work, that an employer who possesses the means to do it ought always to assist his labourers to obtain a good home at a reasonable rent; and he ought likewise to make it his business to provide for them the opportunity of obtaining in a canteen at a moderate price a substantial hot dinner at midday.

But why more details? Good management of labour, in the meaning which I give this word, under modern conditions, depends upon the manager or leader possessing, besides the driving power of a strong personality, a happy blend of keen insight into all the details of the work, and an equally keen and real sympathy with his fellow workers, the labourers.

Many firms in different parts of the world and in various branches have already during the last generation conducted their business more or less on such lines as suggested above, and the result has been invariably that their labourers have earned higher wages than the average current rate of the market, while their business has prospered.

It would not be difficult to find many examples to show how much above the normal level wages may be raised by these means even now, although the science of the management of labour is still only in its infancy. But I cannot refrain from adding some extracts from an article in *The American Magazine* of October 1913 on the achievements of Colonel Goethals, of

the American Army Engineering Corps, as chief engineer and leader of the construction of the Panama Canal. Mr. Goethals is now a General in the army.

Shortly after his arrival on the canal zone, the workmen wanted him to sign agreements with their trade unions as his predecessor had done, but he refused. The canal is not a private enterprise based on profit, he argued, but a government enterprise based on service. We are all here working together for a common cause, and we are all alike wage-earners. Men's pay should not be settled on a basis of conflict, or upon their ability to injure the work through organization, but upon a basis of service, or their ability to push the work. It is as unjust for a labour union to force more than its share of wages as against unorganized men, as it is for a contractor to snatch undue profits. Having no secrets here, and every record wide open, we can and must settle wages, not as a matter of conflict and truce, but upon the basis of what each workman deserves.

"Come to my office any time you like," he said to the workmen, "and we'll talk things over, but we will sign no agreements."

Shortly afterwards an intoxicated engine-driver ran over the signals, collided with a train and killed the conductor. He was sentenced to a year in the penitentiary. His union, backed by all organized labour on the Isthmus, met and resolved to demand his release. A committee called on Goethals and delivered its ultimatum. Unless the engineer was released they would all resign that evening, and tie up the entire canal—as they could easily do.

Goethals heard them quietly, said very little, and shook hands with them when they departed. About eight o'clock in the evening the committee began to worry, and finally calling Goethals on the telephone, asked what he was going to do. "Why," he said, "I thought you had all resigned." "You don't want the work all tied up, do you?" they asked. "I shall not be tying it up; you'll be tying it up. You forget that it is not a private enterprise; it is a government job." "Well, what are you going to do?" they said. "Any man not at work to-morrow will be permanently dismissed. I have nothing further to say."

The next morning only one man failed to appear—and there has been no labour disturbance of any consequence on the Isthmus since.

But Goethals went further. It is evident that if you are not to treat with the men on the old basis of conflict, you must accept unreservedly the new basis of co-operation. In a true public work men must be dealt with, not as mere tools of industry, but as citizens and co-workers in a common undertaking. Therefore justice, not force, in dealing with them is essential.

Goethals announced that he would be at his office at seven o'clock every Sunday morning, and that anyone on the Isthmus, white or black, who thought that he had been unjustly used, might come and see him personally. He sat there for hours patiently to listen to and sift their complaints. By this and other means he obtained an extraordinary, almost an uncanny knowledge of every detail of the work. Is there a weak spot or a weak man anywhere? The Colonel is one of the first to know it. No man down there is personally acquainted with as many men as he.

His great aim is justice, but justice, while it is kind, is never weak. A man came into his office on a Sunday morning complaining that he had been unjustly discharged. A card giving the record of each man is kept at his office, and taking out the record of this particular man, Goethals turned to him and said:

“See here, Mr. Smith, this is your history, and it is not a good one. You have not been faithful to your job. You have been constantly in trouble. We can't dig the canal with men like you. You can see that for yourself. You come asking for justice, and I am going to give it you. I'm going to confirm your discharge and send you home.”

“It is a curious thing,” says the writer of the article, “the impression one gets on the canal of tense activity, almost of strained activity. The rush and urge of the work strikes every visitor.” A writer in the *Pall Mall Magazine* says “that every man who comes to the canal zone is tuned beyond any concert pitch.”

“It is,” he continues, “in his work of arousing, directing, and intensifying this irresistible and irrepressible spirit of en-

thusiasm that Goethals has shown transeendent qualities of leadership. It is the greatest thing that has been done at Panama, and its doing has been no accident: it has been the result of the sound thinking, stern purpose, and the democratic ideals of the leader."

The ideal of irresistible and irrepressible enthusiasm has, says the writer, actually been realized at Panama. How has he done it? When Goethals first went to Panama, the work was arranged on what may be called the horizontal system—that is, the canal was considered as a whole, and one commissioner had charge of all the locks, another of the excavation, and so on. But after a short trial of this method, Goethals reorganized the entire work on what may be called a perpendicular basis. He divided the canal into three divisions—Atlantic, Central, and Pacific—and placed each of them under a superintendent.

Rivalry was instantaneously awakened between these divisions.

"They are putting in concrete at Gatun at so many yards a day," he would tell the foreman, say at Pedro Miguel: "you aren't going to let Gatun beat you, are you?"

A fierce rivalry grew up over amounts of excavation done, cement used, ironwork put in, and the results were published from week to week in the *Canal Record*. The struggle has come to infect all classes of workmen.

Similarly Goethals stirred rivalry among the steam-shovel men as to which crew could dig the most dirt day by day, and week by week, and this contest, the results of which also appear in the *Record*, is one of real interest upon the zone. The steam-shovel scores are as eagerly scanned as the baseball records!

Having thus established records in many lines—excavating, cement-work, and so on—Goethals and his subordinates encouraged the workmen to beat them.

"I hear No. 300 took out 14,000 cubic yards last week," Goethals tells a shovel-man; "you ought to beat that." "Colonel, we're going to do it." "Good, there is a hundred thousand yards right here to take out. Go to it."

One of the great things that Goethals has done is to develop a complete and minute system of cost keeping. In this way

he is able to compare the aggregate work of the three great divisions, and he can judge the efficiency of foremen and even, in some cases, of individual men and crews. And he works all the men constantly against the cost records, of which there is complete publicity.

This is an exceptionally fine example of the new spirit which is developing among us, which is bound to extend over the whole of economic activity, and to grow more intense as years roll by. This new and greatly superior method of conducting business and managing labour, which is as yet only adopted by the most forward firms in comparatively few undertakings, must be imitated in the course of time by all firms who wish to maintain themselves in the struggle of life. For the greater efficiency of an improved method of administration leads to a very material and permanent reduction of cost of production, while at the same time securing to the labourers large earnings. The firms who fail to adopt it will therefore be hopelessly undersold by their competitors, and they will be unable in the long run to attract a sufficient number of labourers because they cannot afford to pay such high wages as the more modern firms.

This movement in the direction of better business organization, and a better management of labour, has hitherto been due more to the personal influence of a few highly gifted and intuitive leaders, or as the more or less unconscious outcome of a common natural aptitude on the part of the managers, than to a conscious and thorough-going investigation on scientific lines of the processes of production, and the many complicated problems which are involved in the many different movements of the body and its muscles which together constitute what is called labour.

This field of investigation, of which it would be impossible to overrate the importance, has been entirely neglected not only by the universities but also in the technological institutes. It has been left to the labourers themselves to discover by chance the most suitable and inexpensive movements, and it has been a very rare occurrence when an industrial leader has individually given this subject any thought. If he did study this matter, and as a result would give his labourers an occa-

sional hint of how they might do their work in a better and easier manner, they would most likely take it as an offence instead of thanking him for the advice.

More than thirty years ago my theoretical studies of economic problems, and particularly of the nature of labour and the law of wages, gradually led me to the conviction that productive labour, involving as it does the application of energy, ought to be studied according to well-known laws of mechanics. Man can only produce by using his muscular energy to move matter. As he has only a given sum of energy at his disposal, the efficiency of his labour depends upon the manner in which he disposes of it—that is to say, upon the movements of his body, members, and muscles. He may make unnecessary or quite unproductive movements, or he may make them larger and more expensive than is needed. As early as in 1892 I pointed out publicly that all the movements of a labourer, when engaged in productive work, ought to be made the subject of a methodic investigation with the object of discovering how the efficiency of labour might be increased.

I did not know that at the very same time a man had begun to lay the foundations of a real science of labour upon the very same lines which I had suggested, a man who went to this task splendidly equipped by a happy combination of a theoretical training as an engineer, and intuitive insight into the very complicated problems which are involved. This man was Frederick Winslow Taylor, who has obtained world-wide fame as the originator of the Taylor system of Scientific Management of Labour.

Mr. Taylor, after serving his apprenticeship as a mechanic, was engaged as a common labourer at Midvale Steel Co. He soon made himself useful, became a turner, and shortly afterwards under-foreman. At last he was made head foreman of the whole works.

Nearly all work in this firm had for years been done at piece-rate wages. As was at that time customary, and still is customary in most engineering works, the works were in reality managed by the labourers and not by the foremen. The labourers had agreed in detail upon how fast each job should be done, and they had fixed a certain speed for each machine in the works; this speed was about one-third of an

honest day's work. Each newcomer was at once informed by the old labourers how much of each kind of work he might do, and if he did not obey these rules he might be sure of soon being driven away by his fellows.

"As soon as I had been made foreman," Mr. Taylor says in his little book, *Scientific Management of Labour*, "the labourers came to me and said that if I would be on their side everything would be well, but otherwise I should not be long there."

But he insisted on looking after the interest of the employers.

"As soon as I had become foreman of the works I determined to try to alter in some way the system of work entirely, so that the interests of the management and of the labourers might become identical in contrast with the hostility which had previously existed. This led after about three years to the introduction of the kind of management which is explained in two books which I submitted to the American Society of Mechanical Engineers under the titles of *A System of Piece Payment* and *Business Management*.

"Under the preparatiom of this system I acknowledged that the greatest hindrance to a harmonious co-operation between the labourers and the management consisted in the ignorance on the part of the management of what is really a proper day's work for a labourer. I saw clearly that although I was the foreman of the works, the combined knowledge and ability of those who were placed under me was certainly ten times larger than mine. I obtained, therefore, the permission of one of the directors of the company to spend a sum of money on a thorough study on scientific lines of the time needed for executing various kinds of work.

"Mr. Sellers, the director, agreed to this more as a reward for my having increased the production than from any other reason. He explained that he did not believe that such a scientific study might give any real result.

"One of the investigations which we then made had for its aim to discover some rule or law which might enable a foreman to know beforehand how much heavy labour of whatever kind a suitable man might do in a day; that is to say, the thing was to study the physically fatiguing influence which heavy labour had upon a first-class labourer. Our first step was to engage

a student whose duty it was to ascertain what had been written upon this subject in English, German, and French. Two different experiments were made, one by a physiologist who studied the endurance of the human body, and the other by engineers who tried to determine the proportion of a horse-power to that of a man. These experiments were partially made upon labourers who lifted weights by a winch with weights attached, and upon other labourers who walked, ran, or in various ways lifted weights. But the results of these investigations were of little value, and no law of importance could be deduced from them. We next began a series of experiments on our own method. We selected two first-class and steady labourers. They received double wages during the period of the experiments, and we told them that they must work the whole time as hard as they possibly could, and that we should take certain means of control from time to time to see that they did not slacken, and if they tried to cheat us they would instantly be dismissed. They worked as hard as they could during the whole time of the experiments.

“Stress must be laid upon this point that the purpose of these experiments was not to discover the maximum of work which a man could do in a short time, but to ascertain what may really be considered as a proper day’s work for a first-class man; that is, the best day’s work which a man may conveniently do year in, year out, without physical or psychical overstrain. These labourers were given all manner of tasks which were daily executed under close observation of the young student who had charge of the investigations, and who at the same time noted by the use of a time-observer watch the time which was required for all the muscular movements of the labourer. Each movement which in our opinion might influence the result was studied and noted. What we hoped finally to be able to determine was, how great a part of a horse-power a man might yield—that is, how many metrekilogrammes of work a labourer might execute in a day.

“When we ended these investigations, each man’s labour was therefore calculated in metrekilogrammes, and to our surprise we discovered that there was no constant and regular proportion between the sum of kilogrammetre which a man could do in a day and the fatigue of the labourer. In certain

kinds of work the man might be tired out, when he had perhaps not yielded more than one-eighth of a horse-power, while in other cases he was not more tired after having done work corresponding to half a horse-power. We were therefore unsuccessful in finding a law which clearly defined what is the maximum of work of a first-class labourer.

“ But we had obtained a very valuable material, which told us as regards many kinds of labour what might be considered as a normal day’s work. At that time no more money was available for discovering the law we were seeking for. Some years afterwards, when larger means were at our disposal, a new and similar series of experiments were made. These also, like the previous ones, gave a number of valuable informations, but did not lead to the discovery of the law itself. Some years afterwards a third series of experiments were made, and this time no pains were spared to make the investigation complete. Even the most minute detail which might have influence upon the problem was noted and carefully studied, and two students spent about three months upon the experiments. After the observations had again been calculated into kilogrammetres, it was clear that there is no direct proportion between the horse-power which a man yields and the fatiguing influence of the work upon the labourer. I was, however, still convinced that a certain decisive law existed as to what is a full day’s work for a first-class labourer, and our observations had been collected with so great accuracy and completeness that I was convinced that the necessary data were contained in these statistics. The task of discovering the law from these facts was therefore confided to Mr. Carl G. Barth, who was a better mathematician than the rest of us; and we agreed to consider from a new point of view, viz. by graphically depicting each element of work through curves, which gave us as it were the whole matter from a bird’s-eye point of view. In a comparatively short time Mr. Barth discovered the law which regulates the fatiguing influence of heavy manual labour on a first-class man. This law is so very simple that it is peculiar that it had not been discovered and clearly fixed long ago.

“ The law is restricted to that kind of work where the fatigue sets a limit to the power of production of the labourer. It is the law of heavy bodily labour, corresponding rather to the

work of a horse of heavy work than to that of a racehorse. All such labour consists practically in lifting or pushing with the arm; that is to say, the man uses his strength by lifting or pushing the object which he holds by the hand. The law says that at every lifting or pushing which the arm of the man produces, it is possible for the man to be weighted only during a certain percentage of the day of labour. Thus a first-class man may be 'under weight' in loading iron bars weighing 40 kg. during 43 per cent. of the day of labour. He must be free completely of weight during 57 per cent. As the burden is made easier, the labourer may be under weight longer, he may labour a proportionately greater part of the day. So that if he loads half-bars of 20 kg. he may be under weight 58 per cent. of the day, and rest only 42 per cent. According as the weight becomes easier, the labourer may work a longer part of the day, until finally a burden is reached which may be borne all the day without fatigue. When this point has been reached this law has lost its value, and some other law must be discovered to judge of the capacity of labour of a man.

"When a labourer carries in his hands an iron bar weighing 40 kg., it tires him equally whether he stands still with the burden or he walks with it, as the muscles of the arm are equally strained whether he moves or not. But a labourer who stands still with a burden does no measurable work, which explains the fact that in many kinds of heavy work it is not possible to trace any constant proportion between the sum of kilogrammetres and the fatiguing influence of the labour. It ought therefore to be clear that in all work of this kind it is necessary that the arms of the labourer are quite free from weight (he must rest) during frequently recurring periods of rest. During the whole time when the labourer carries a heavy burden the tissues of the muscles of the arm are weakening, and frequent periods of rest are needed to let the blood have an opportunity of restoring the tissues to their normal condition.

"One of the first kinds of labour on which we commenced to apply my ideas at the Bethlehem Steel Works was that of loading iron bars according to my system of giving each labourer a fixed task for the day.

"At the Bethlehem Steel Works the production of iron bars

was loaded on railway trucks with manual labour by a gang of about seventy-five men. They were good ordinary men under a good foreman who had himself done this kind of work, and they did their work as well as at other firms in the district. A siding was laid on to the truck, and each man lifted up a bar of 40 kg., carried it up the plank and let it fall on the truck.

“On an average each man of the gang had previously loaded $12\frac{1}{2}$ tons per day, but to our surprise we discovered, after having studied the matter, that a first-class carrier ought to load between 47 and 48 tons in a day. This quantity appeared to us so extraordinarily large that we were compelled to control our calculations several times. But when we were at last convinced that 47 tons per day was the proper task of a man we understood what we, as leaders of labour, had to do in order to apply the new system to this particular problem. We had to arrange things so that the existing stocks of iron, 80,000 tons, could be loaded at the rate of 47 tons per man and day, instead of as previously $12\frac{1}{2}$ tons. It was further our duty to see to it that this change was done without any strike or trouble with the men, and to arrange it so that they were more pleased and satisfied when loading 47 tons than when they loaded at the old speed and carried only $12\frac{1}{2}$ tons.

“The first step was to select the men. When one has to do with men on this system, it is a fixed rule to talk and arrange with each man separately, as each man has his special fitness and character. . . . At last a Pennsylvanian was selected for the experiment.”

He was asked if he would like to earn \$1·85 instead of \$1·15 as he previously earned, and on his undertaking to make the experiment, he was told to do exactly what a controller told him to do.

The man, let us call him Smith, began work in the morning, and all day he received orders from the man who stood over him, timetaker-watch in hand: “Take up a bar and carry it,” “Sit down now for rest,” “Go,—rest,” etc. He worked when told, rested when told, and at half-past five o’clock in the evening he had loaded his $47\frac{1}{2}$ tons on the truck. During the three years Mr. Taylor remained in the Bethlehem Works, this man steadily worked at this rate, earning a little over \$1·85 a day, against earning \$1·15 previously, which at that time was the

usual rate of daily wages at Bethlehem. He obtained 60 per cent. more than men who worked at the old system. One after another of the other men was selected on the same principles and were trained to load bars at the rate of 47 tons a day, until all the iron was loaded at this rate, and the men received 60 per cent. higher pay than at the neighbouring works.

As to the methodical selection of the men, it may be stated that in the gang of 75 men who carried iron bars, only one man of eight possessed the physical constitution allowing him to work at this rate. Even with their best will the other seven could not work with this speed (but the seven men were given other work with the firm). The one man was not superior to his fellows, except in being a man of the "ox" type, a type which is not rare, and which is not generally highly paid. He was, on the contrary, so little gifted that he was even unfit for most kinds of heavy work. The selection in this case had to be done on this rule to pick out among very common men just those who were specially fitted for this particular job.

The system was also applied to the coal and ore heavers of the company. The results were :

	Old System	New System
Number of outdoor men reduced from . . .	400 to 600	to 140
Tons on an average per day and man	16	59
Average daily pay . . .	\$1.15	\$1.88
Average cost for transport and loading	\$0.072	\$0.033

And in spite of the low cost of \$0.033, there is included in the same the expenses of office and tool-room, and wages to inspectors, foremen, clerks, timekeepers, etc.

"Without doubt people who are interested in the lot of the labourers will think it unjust that the labourer who works under the new method of management does not receive twice as high pay when he does twice as much work as before, while others who are more interested in high dividends complain that the men receive higher wages than before.

"It seems very unjust, for instance, that the selected iron

carrier who has learnt to load three-and-a-half times as much iron as an unfit fellow did before, only receives 60 per cent. addition to his wages.

“But it is not right to judge definitely before having considered all the factors. At first sight it appears as if only two parties were concerned, viz. the labourers and the employers. The third party is overlooked—the consumers who buy the produce of the two and who finally pay both wages and profit.

“The rights of the public are greater than that of both employers and labourers. And this third party ought to have his gain in every kind of profit. In reality a glance at the history of industry demonstrates that the nation as a whole obtains the greater part of the advantages which industrial improvements bring with them. Without doubt the greater part of the gain which has resulted from introducing machinery instead of hand work has fallen to the lot of the public—the consumers.

“As to the iron carrier. He is, as previously remarked, not at all an exceptional man or difficult to find, but only a fellow of the ‘ox’ type.”

The work he does, does not tire him more than any normal day’s work tires a healthy man. (If he is over-taxed, the task has been made too great, which is entirely against the system.)

“The circumstance that this man could do so much work in a day was not due to his own initiative or originality, but to the knowledge of the art of carrying iron bars, an art which has been developed and instilled in him by another man. It is not more than just that people of the same type earn about the same wages when they work as hard as they can; it would, for instance, be a great injustice if this labourer received 3·6 times as high wages as other labourers of the same class obtain for a proper and honest day’s work.

“And the advance of 60 per cent. which he obtains is not determined according to the personal judgment of the foreman or the owner of the business, but is the result of accurate experiments which have been made absolutely without any bias to determine which recompense will be most advantageous for him when all circumstances have been considered.

“It will therefore be seen that the iron carrier with his

60 per cent. advance is not to be pitied, but he is to be congratulated."

I refrain from quoting any of the other examples which Mr. Taylor has given to show the results of his new system of scientific management of labour which depends upon the following principles :

- (1) The men of the management develop for each detail of work a system or science which replaces the old haphazard method of doing things.
- (2) They select their labourers after a rational study, and train, educate, and develop them, while hitherto the labourer himself has chosen his work and trained himself as best he might.
- (3) They work in hearty co-operation with their labourers, so that they may be sure that all work is executed in accordance with the rational principles which have been prescribed.
- (4) Work and responsibility are divided almost equally between the management and the labourers. The management undertakes all the work for which it has better education than the labourers, while previously all work and the greater part of the responsibility were thrown on the labourers.

It is this combination of the initiative of the labourers with the undertaking by the management of new duties which makes the new system much more efficacious than the old one.

"The fourth of these principles, that work and responsibility are divided equally between the management and the labourer, requires some explanation. The competitive system demands of each labourer full responsibility for the work both in the total and in the details, and in many cases also for the selection of the tools. In addition he must do all the physical labour. The development of a scientific method necessitates that a number of rules, laws, and formulæ must be determined, which shall replace the personal judgment of the labourer, and which can be employed with advantage only when they have been systematically fixed and put into order. The practical utilization of scientific experience requires room for books, statistics, and a desk for the trained brain-worker, whose duty

it is to give his directions for the work.¹ All the brain-work which under the old system was done by the labourer as the result of his personal experience, must be done under the new system by the management in accordance with scientific laws. For even if the labourer were capable of developing and using a scientific system, it would be physically impossible for him to work simultaneously at the machine and at the writing desk. It is therefore natural that in most cases a special person must do the brain-work, and that quite other people should be employed to do the physical work."

The Taylor Scientific System of Management of Labour may not be applicable everywhere and in all kinds of business, and he himself strongly warns against attempting to introduce it except under the lead of experts who have been trained for that purpose. He also gives an example as a warning of an industrial firm which wished to introduce the new system, but who were in a hurry and tried to carry it through in far too short a time. But the very fact that such a system has been developed, and that human labour has been made the subject of systematic investigations on scientific lines, is a very hopeful sign of our times. It will lead the public, and particularly the employers of labour, to pay serious attention to a matter of the most vital importance, namely, the reduction of the terrible waste of energy which goes on everywhere, and which is occasioned by the very inefficient quality of most of the labour which is done in the world.

The publication of a system like that of Mr. Taylor, even where not adopted, will tend to focus men's attention upon this great subject, and employers of labour everywhere will begin to scrutinize more closely, to their own gain and to the great advantage of the labourers whom they employ, in the first instance, and, as Mr. Taylor points out, ultimately to the gain of society as a whole.

It is a lamentable fact that those people who ought to have hailed the introduction of a better management of labour as a happy event and as a matter of special concern to themselves, the working classes, look askance at all such innovations.

¹ The annotations which are needed in an ordinary engineering works where the new management has been introduced filled thousands of pages.

They believe that such a system is only intended to force them to do more work, and even if it is at first attended with an advance of their wages, they fear that it may ultimately be used against themselves by leading to a cutting of the piece rates.

The working classes therefore deliberately prevent as much as they can the introduction of better methods of production and the better management of labour, by intensifying their passive resistance. Slacking, "ca'canny," or sabotage, as it is called on the Continent, has never before prevailed to the same extent and in such odious forms as it does to-day in every industrial country of the world.

The working classes believe, and are told by the Socialists, that if each man produces as much as he is able to, this will lead to an over-production, and that it will eventually, they believe, throw a certain number of people out of employment.

This belief is an unconscious reminiscence from the time at the beginning of the machinery era, when domestic industries were superseded by factory production. In the period of transition, saving of labour by new and better methods of production very frequently resulted in the throwing of many of the old hand-workers out of employment. But under present conditions the successive improvements of the methods have no such lamentable consequences; for experience has abundantly demonstrated that the price reductions which these improvements make possible, rapidly lead to so great an increase of the demand that an improved industry regularly employs a much larger number of workpeople than before the improvements were made.

And as to the labourers' fear of having the piece rates cut against themselves, if they increase their efficiency, this is also happily for the greater part based upon experiences of the past which do not any longer apply to conditions of to-day. In previous generations employers did, as I have already on several occasions pointed out, make the great blunder of reducing piece rates when they saw a chance to do so. But in our days this will not any longer happen, at least not upon any considerable scale. For the rate of capitalization, which is already high, is rapidly growing. Although the employers as

a class have perhaps not become more considerate for the welfare of their labourers than employers in past ages, they have become more intelligent. They are therefore able to comprehend that labour of a fairly high grade is a necessary condition of making a reasonable profit on the large capital which is invested in their business. To obtain labour of this quality is for each employer the all-important question, for which he is therefore willing to pay sufficiently high wages.

In this connexion it may be pointed out that it is the most advanced firms, those who have reached the greatest technical development, that take the leadership in the direction of paying high wages, because they are most in need of obtaining efficient labour; and they force the other firms to follow suit. But the technical development of the industries of a country is to a great extent limited by the average level of efficiency of the working classes. Many an industry might, for instance, be introduced with advantage into Norway, which has not been taken up for the reason that those who should be the leaders are not certain of securing in that country labourers of sufficient skill and practice in the particular kind of work which is required.

No, the working classes do themselves the greatest harm by shirking their work, and by not striving to increase their efficiency as much as possible.

If the reader will take the trouble to look at the description of the evolution of the methods of steering vessels on page 309, I will make a somewhat fanciful calculation to give some idea of how great is the loss which the present highly reprehensible attitude of the working classes involves for society as a whole, and for themselves in particular.

There are, let us say, in all 500 millions of people in the world who obtain their livelihood as wage-earners. Let us assume that each represents one-fifth of a horse-power, or in all 100 millions of horse-power at work each day. If these yield, let us say, on an average only 10 per cent. of efficiency, while the best West of Europe or American labourers yield, say 50 per cent. of efficiency, the difference is 40 million horse-power. Compared with the vast steam or water horse-power of the world this does not perhaps appear as an appalling loss. But if we fancy that all kinds of productive work had been carried to such a degree of technical perfection as the steam

steering gear of a modern steamer, so that all human labour had been converted from being mainly physical to being almost exclusively a nervous exertion like the work of the sailor at the helm of a steamer which is fitted with steam steering gear—and this is the tendency of the technical and economic evolution—what a difference it would make to have at disposal human labour which represented an additional energy of kilogram-metres equivalent to 40 millions of horse-power! And this difference, with the augmented production which it stands for, would directly or indirectly benefit the working classes most, partly in the form of higher wages, partly as lower prices of the commodities for the consumers, of whom they form the overwhelming majority.

The working classes of the industrialized countries have during the last thirty to forty years had all things moving in their favour. The demand for labour has been constantly and rapidly increasing, and wages as a consequence have steadily increased. But under the baneful influence of Socialism, which has played upon their ignorance and bad instincts, the working classes have used their opportunities foolishly; instead of securing permanently higher wages by improving the efficiency of their labour, they have made the keen competition for their services an excuse for shirking their duties.

The employers of to-day suffer for the faults and sins of the employers in previous generations, for their omissions and commissions, also, for instance, for the negligence of previous generations to provide better school education for the working classes. But if the labourers believe that they will escape punishment for the stupid immorality of doing their work in a slovenly, negligent, and inefficient way on purpose, they are greatly mistaken.

The Socialists and the other self-appointed leaders of the labourers might to some extent plead their ignorance in extenuation of the sins they commit against their fellows, whom they mislead against society and the employers. They are, however, much too arrogant to dream of pleading or making any excuses; but it does not much matter what they may do in this respect. For it is only the effects of wrong acts which are always in course of time rectified by what the Greeks called Nemesis, not the intentions of those who committed the acts; and as

the atonement which posterity must make is generally commensurate to the gravity of the sins which have been committed, it may be predicted with certainty that it is a very severe punishment which awaits coming generations of labourers for the many atrocious wrong-doings of the present one.

CHAPTER XVII

ECONOMIC CONDITIONS AFTER THE WAR

THE moral attitude of the working classes towards their own labour would no doubt in course of time have changed as a consequence of a steady increase of their demands, particularly for that most expensive class of commodities which are somewhat vaguely classified as "comforts." For these greater demands they could not satisfy unless their earnings increased proportionately, and the only means of permanently securing higher wages would be to increase the efficiency of their labour.

This process would have been at best a slow one, and greatly checked by the false theories which the Socialists preach to the working classes, as well as by the long-continued and almost universal habit of the industrial labourers to cheat their employers by doing as little work in return for their wages as they dare. For the sake of the continued progress of our race it is, however, essential that a radical change should occur in the conception of their duties which is prevalent among the majority of the working classes. Unless they are willing to do an honest day's work for their wages, it is quite impossible that the production of commodities can be increased to the extent which is a necessary condition for satisfying their own demands as well as the technical knowledge and ability of our times would otherwise make possible. When we frankly admit that the aim of existence should be the greatest good of the greatest number, and we translate this phrase in terms of money, we may say, that to keep up a family and live in comfort, a first-class industrial labourer ought to earn as wages upwards of £220 per annum, while even in the Western countries of Europe an average good workman at present, or rather before the war, could not count upon earning more than half that sum, perhaps not so much. Let us assume that for the whole of

Europe the average annual wage of industrial labourers amounts to as much as £75. I believe that profit on capital averages about 50 per cent. of the wages; if so, the aggregate earnings per man for wages and profit would amount to £112 10s., which would consequently be the very top wages of the labourers, on the supposition that Socialism were to be fully realized, and all "means of production" were taken over by the community, provided that the whole of the profit could be distributed among the labourers as an addition to their wages. But, as I have previously shown, the profit could not be used in this way, but must be for the greater part used to maintain and increase existing capital accumulations. With the examples of Mr. Taylor before us, who can doubt that if all intentional slacking were abolished, and scientific management of labour introduced, the average industrial labourer would at once be worth and receive at least £56 per year higher wages than now, while at the same time the cost of production and the selling prices of the commodities would be materially reduced?

The great increase of material wealth which would be the immediate result of only a very moderate increase of the average efficiency of labour, and which would at once place the working classes on an entirely different plane of economy with a much higher standard of life, would be accompanied by a more than proportionate moral and intellectual uplifting of their class, and a purifying of society as a whole; for it would mean nothing less than the abolition of economic class distinctions altogether.

This is no utopian dream, but it is my deliberate conviction, after spending more than thirty years upon a conscientious study of the problem of labour and wages, that it is well within the power of the working classes to increase their earnings by at least 50 to 100 per cent., without any overstrain of their strength, provided they are in earnest about it, and receive the assistance of a better system of management.

Up to the present moment the great improvement which has taken place in the condition of the working classes, has come to them almost gratuitously and without any great efforts on their own part, mainly as a result of the energetic work which the middle classes have done for realizing the promises of the

industrial revolution of 150 years ago. The middle classes have not only provided most of the capital and managed the business of the world ; but they have shown themselves to be possessed of sufficient imaginative power to carry forward more and more rapidly the intellectual conquest of mind over matter. They have until now had almost a monopoly in creating new ideas, on which the moral and intellectual progress of civilization depends now as always.

It could not be otherwise, for they have had a very long start of the working classes, by better education, better general intellectual training, and better economic conditions. But when the working classes look with envious hatred upon the middle classes for the great advantages which these enjoy, they ought to consider that by the end of the Middle Ages there existed practically no middle class in Europe. The position which they possess to-day they have won for themselves in the course of 300 to 400 years without any privileges, by their thrift, enterprise, and industrious habits. Furthermore, the middle classes have not been a close caste like the feudal nobility, but have been constantly recruited from the agricultural population and from the working classes. It is they who have liberated Europe from the yoke of feudalism, and who have been the bearers of the civilization with its spiritual and economic progress during the Modern Era.

Instead of envying them, the working classes ought to be stimulated by their example, and raise their own status in a similar manner, by use of the same means, viz. self-education and sustained and energetic efforts. What is more, no nation or class of men has ever during the history of the world seen their condition materially and permanently improved, except as the reward of their own exertions. The working classes will ultimately find that they are not exempt from this law, but that they must work out their own salvation for themselves, just as the middle classes have been obliged to do.

The moral, intellectual, and economic uplifting of the working classes is a matter of paramount importance, not only to themselves, but to humanity as a whole, and anything which may hasten this evolution is therefore of the deepest interest to us all.

There is very good reason to hope and believe that the great and terrible war, which will in a few weeks have reached its

third year,¹ may bring with it the inestimable and unforeseen blessing of ultimately causing a revolutionary change in the moral attitude of the working classes. If this should really happen, the gain would be so enormous that it would more than balance the losses of life and property of the war, appalling as these have been and still are.

During the many years of political unrest which tormented the world before 1914, persons who intimately knew the economic conditions of Europe steadily refused to believe that any statesman would take the responsibility of breaking the peace. The inevitable consequence of a general European war must be, they thought, a complete stoppage of industries and commerce, and this would mean actual starvation for the many millions of people whose only means of subsistence were the weekly wages which they received for their work in the factories and shops—universal starvation and death from hunger for hundreds of thousands of people, this was the gruesome spectre which the terrible word WAR called up in the minds of close observers of the artificial existence in highly industrialized countries. It was artificial in this sense, that the great industrial population did not produce its own food, but depended entirely upon commerce and exchange of products with people in other countries and other continents. In Lancashire or the Rhine Province, for instance, these enormous ant-hills of busy human millions, one saw hardly any other than imported food. When all their thousands of mills were closed, because there was no market for their goods, how should the workers and their families be fed?

The Emperor William and his advisers nevertheless took this awful responsibility, and to his eternal disgrace he declared war against humanity.

What were the immediate economic consequences? were hunger and death from starvation at once spread in the hundreds of thousands of homes of the working classes? No, after a few days of the most intense suspense which the living generation has experienced, and the most complete collapse of the entire commercial, financial, and industrial machinery of the world, the wonderful elasticity of human nature very soon manifested itself, and things began to move again,

¹ It must be remembered that this book was written in the year 1917.

in a new world and in a new plane as it were ; but they moved.

What is the explanation of the mistake which had thus been made in the forecasts ? how can it be that to-day, after nearly three years of war, the apparently paradoxical fact meets us that there is still, not only in neutral countries, but in all the belligerent countries as well, an economic boom of the most extraordinary dimensions, with a plentiful supply of money, and employment at enormous wages for all the people who are not actually in the fighting lines ?

The explanation is the very simple one : that the war itself has become the most gigantic economic undertaking which the history of the world has ever had to record ; and while it lasts it has replaced all other industrial and commercial activity. This possibility had not been properly taken into account when making up the forecasts. But neither was human imaginative power strong enough to gauge in advance the extent of the economic sacrifices to which Europe would submit in order that one half of it might ruin the other half, nor was it possible to believe that the financial strength would be great enough to carry on the war so long, even if the will was there.

A mistake had thus been made in calculating the time within which the suicidal war of Europe, of all against all, would end in the bankruptcy of our continent ; but those who find themselves still in a vortex of speculations, and who believe, perhaps, that an error has been made in calculating the final consequences of the terrible expenses and the devastations of the war, will one day have a rough awakening. The war as a gigantic business undertaking has delayed the economic collapse of Europe, but the longer it lasts the more terrible will be the catastrophe when at last it occurs.

The belligerent States have laid embargo upon the entire national power of production, which is pressed to the breaking point to manufacture cannons, guns, ammunition, and the thousands of other costly things which a modern army requires, besides food for the soldiers and the home population. And as they have not been able to produce enough themselves, they have been compelled to seek the co-operation of the neutral countries to obtain enough of the means of destruction.

Although we live in an age of newspapers, we know practically nothing with certainty of what has really been going on in our continent during the last three years. No one outside of the great army staffs can tell how many soldiers have actually been mobilized, but their number cannot be much short of fifty million men. Neither do we know the figures of those who have been killed or wounded, nor of the prisoners. There is good reason to fear that the number of killed alone may reach something like six or seven millions.

The total expenses of the war—apart from private losses, disorganization of business, and the devastation of the occupied countries—were calculated by a Danish society, which had been formed for investigating the economic consequences of the war, to reach for the two first years a total sum of at least 10,370 million pounds sterling, and by the end of the third year they will probably not fall short of 16,000 to 18,000 million pounds. There is no man alive who has imagination enough to grasp the significance of such figures; they are akin to the figures of the astronomers which are unintelligible to ordinary mortals.

To find a comparison I have tried to calculate what was the national income of Europe before the war. The population was about 450 millions, say 90 million statistical families of five members. I have supposed that there were in all as many as 100 million wage-earners, and that they earned on an average £56 5s. per annum, or about 4s. 4½d. a day. This may perhaps be a high average, when the low level of wages in the east and south of the Continent, and of female labourers, are taken into account. On this supposition we reach an annual income from wages of £5,625,000,000. To this I add 50 per cent. for profit on capital, and thus I reach a total income of £8,427,000,000.

The national income has been stated to be in millions of pounds:

Great Britain and Ireland.	.	.	2,200
France . . . . .	.	.	1,460
Italy . . . . .	.	.	400
Germany . . . . .	.	.	2,000
Austria and Hungary . . . . .	.	.	625
	Total .		<u>6,685</u>

If the two estimates are compared they seem to confirm each other. The number of inhabitants of the above five countries was 241 millions, and if the average income of the other countries were proportionately the same, we should reach a total for the Continent of about 12,500 million pounds; but the five countries are among the most economically advanced, and one arrives probably as near the truth as it is possible in such an estimate when assuming the total national income of our continent to have been before the war about 10,000 million pounds sterling. On this supposition the war will have cost our continent in the first three years a total of approximately 50 per cent. more than the peace income of a year of the entire population before it broke out.

Europe rushes with a speed faster than the fastest express train towards an economic and financial ruin that will engulf the fruits of the wealth and culture-creating labour which has gone on at a constantly increasing speed since the beginning of the industrial epoch.

The financial means for carrying on the war have been obtained for the greater part with the help of loans which have been piled one upon the other, until they have become a veritable tower of Babel, threatening to reach up into the skies.

I have tried to explain to myself how it has been physically possible to raise such gigantic loans, and I have come to the following conclusion.

As the industrialization of the world has progressed, indirect methods of production have been introduced which attain by constantly longer detours the object of reducing the cost of production of the commodities for the consumers. Let me give one or two examples of what I mean. The soil of Europe could not any longer produce sufficient quantities of cereals for the growing population, and the prices were high. Splendid wheat land of enormous extent existed on the American prairies; but it was almost worthless because there were no means of transporting the wheat which might be grown there to Europe. Far-seeing railway managers began constructing railways from the prairies to the seaports, and in the beginning of the eighties that inflow of American wheat began which so much frightened farmers in Europe. Another example. The automobile industry caused such a rapid increase in the con-

sumption of rubber that the natural tropical forests could not satisfy the demand, and prices rose enormously; at once a boom was created for starting rubber plantations in the tropics, the augmented supply from which had before the outbreak of the war driven prices down below the normal. In a similar manner the production of raw materials or of industrial products is immediately augmented when the supply is found insufficient. How is this possible?

A long time was needed for constructing the first railway from the prairies to the sea-board; and it takes years before the trees in a new rubber plantation may be tapped. In these and all similar cases a number of men must work in the planning and the execution, whether it is factories, railways, the cultivation of the prairies, planting of rubber trees, or whatever else is needed. Only in rare instances does the capital which is invested in such undertakings give any yield before they are completed; but all the engineers, clerks, and labourers who are employed must in the meantime be paid, so that they may buy their means of subsistence.

It is clear that such prolonged undertakings, however useful they might be, could not be started or completed unless that part of human activity which has for its object the production of food or other articles of daily consumption were large enough to leave a surplus for maintaining also those people who are employed in such undertakings as were mentioned above.

The revenue of the capital which is already invested in going concerns is so large that the owners can accumulate each year a part of it, which, together with the savings of officials and labourers, forms the amount of fresh capital that may each year be invested in new and prolonged productive undertakings for the future increase of production. The accumulation of new capital has grown during a long time with constantly accelerating speed. A part of the capital invested in new undertakings is used to pay wages to engineers and labourers who are directly employed in the construction of the new undertakings; but the greater part is used to pay for the material objects, such as iron, bricks, woodwork, machinery, etc., in which the capital is invested. With the growth of capital accumulations, and the increase of the amount which was annually invested, the number of mines, of iron and metal

works, of woodwork industries, of engineering works, and similar establishments has also grown. Their main occupation is to supply products which are practically solely used as objects of capital investments. And the number of labourers who are constantly employed, from the beginning of the year to its end, in such establishments has totalled many millions.

Coal mines, iron works, and many other large industrial concerns would soon have to close down and discharge their labourers if they were restricted to selling their output to the general public for direct personal consumption, and if they could not sell almost the entire production to those persons who have accumulated fresh capital which they are willing to invest in new productive undertakings.

To a very great extent Europe owes its rapid industrial evolution during the last generation to the circumstance that our continent has been able to grant the other continents enormous loans for the development of their great natural resources. These loans have been concluded as money transactions ; but it is goods, and only to a small extent ready money, which the oversea countries have wanted ; and as the cultivation of the land and the production of raw materials has been the most profitable field of activity in these countries, their industries have as yet not been very much developed. They have therefore imported from Europe, not solely objects for capital investment, such as iron, agricultural implements, etc., but also a great part of their requirements of commodities for direct personal consumption. It is impossible to say how many industrial products of this last-mentioned character Europe has exported, but in this kind of industry several millions of European labourers have also in all probability been regularly employed.

I know no method by which it might be possible to calculate, even approximately, the amount of fresh accumulations of capital of the world ; but it is certain that the amount is enormous. In extensions of the railways of the world alone more than £250,000,000 have lately been annually invested, which is obviously but a very small part of the total amount which has been needed for cultivating new land, building houses, starting factories, etc. And until the beginning of the unfortunate war, by far the greater part of the new capital

investments of the world was supplied by our little continent. It must be obvious that such great amounts of capital could not be withdrawn from the daily circulation, and invested permanently in new productive undertakings, unless there existed a correspondingly large fund of floating capital which could act as a regulator. This fund must be constantly filled by using raw materials, which are converted by agriculture and industry into manufactures or finished commodities, which, when ready for use, either go into consumption or are invested in new productive undertakings.

What is this great reservoir of floating capital that we are looking for? and is it possible to a certain extent to determine how large it is?

The time which is needed for production is different for different goods. When, for instance, the cereal crops of the year have been harvested, certain persons, the farmers or others, are the owners of the corn. The entire quantity is regularly consumed in the following twelve months until a new crop can be harvested. In this case the working capital is equal to the value of the consumption of one year. But several years must elapse from the birth of a calf until a full-grown cow can give milk. The working capital for rearing cattle must therefore be comparatively larger than for growing cereals. From the moment that logs are cut to the time when they may be used in a cellulose mill about two years must pass. Only during the third year are they converted into cellulose; and a still longer time must pass before all the cellulose is converted into paper. In this case a capital is required which corresponds to three times the sales in one year of the finished product.

If we assume that all kinds of commodities on an average require a capital of an amount equal to twice the value of the quantity of the finished article that is consumed in one year, we come to the result that the annual productive activity of Europe in time of peace required a floating or working capital of between 16,000 and 20,000 million pounds sterling. This capital consisted only to an inconsiderable extent of ready money, not more than sufficient for the daily retail transactions; the rest consisted of raw materials, and goods in all stages of manufacture, from the half-manufactured up to the finest products ready for consumption. All these things were in

stock with the different producers, or with the dealers and shopkeepers, or they were moving from one of them to the other.

As a result of the highly developed activity of the markets and the stock exchanges, this immense quantity of raw materials and goods was constantly the object of trade. Those who wanted to buy could always find sellers, or vice versa. And if a producer or a dealer had sold goods, and did not wish to buy new goods or raw materials at the same time, he deposited the money which he received in payment in a bank. This, by loans transferred to the borrower the right which follows money, of buying in the market commodities of any sort in the quantity which at the moment represented the equivalent of the money. By the intervention of the banks the exchange and currency of the goods have been nowadays many times increased in comparison with what they were before banking on modern principles had been introduced.

By the organization which is called the money market, but which is in reality the credit market, this reservoir of floating capital is regulated, under ordinary circumstances, as finely as a turbine or a steam engine which is fitted up with the most perfect regulator. As soon as speculation in new investments became too rapid, making the investments larger than that the new accumulations of capital could replace the efflux from the reservoir, the rate of interest rose, and conversely the value of money declined when speculation was dormant, and the level in the reservoir rose. Although the available floating capital of the world was therefore exceedingly large, experience has in recent years repeatedly shown that excesses of investment which have been mere trifles in comparison with the expenses of the war, have been sufficient to make the banking organization react. It is sufficient in this connexion to recall the most recent financial crises before the war, in the United States, Germany, or France.

It is no doubt this great reservoir of Europe of floating or working capital, which under normal conditions carries on and makes possible the daily production of commodities, of which the belligerent States have availed themselves to obtain the financial means for carrying on the war.

Be it remembered that this working capital, because consisting mainly of raw materials and half-manufactured goods,

was what may be termed convertible. Of an ingot of steel it is equally possible to make a ploughshare or a cannon-ball. Wool may be made into military cloth or cloth for the civil population, and so forth. At the beginning of the war there existed therefore in Europe, or could be obtained from other continents, enormous quantities of material objects of every kind, which might be used in the manufacture of everything which the armies needed; and those works in particular which had been mainly occupied in supplying objects for capital investment, especially the great iron works, could be applied almost without any change to the exclusive production of materials of war.

The only thing that was needed was for the States to secure the power of using these stocks together with a sufficient number of labourers, and this power they obtained by means of their war loans.

The banks with their highly developed organization were employed as intermediaries. The first step which the different States took was to put the regulator of the international money market, gold, out of function, all of them except England forbidding export of gold. And even as regards this country the stocks of gold are entirely under the control of the Government. At the same time the printing press was requisitioned to print an enormous amount of bank-notes; for the same purpose banking credits were extended far beyond normal limits. By these and many similar arrangements the belligerent States created an apparent abundance of money, which veiled for their citizens the fact that the stocks of material objects, which should serve as the basis of their future productive activity, were reduced with alarming speed. The consequences were high prices for commodities; and owing to this, the labourers demanded and obtained higher wages. At the same time the exchange value of the currencies of all belligerent States fell at an alarming rate.

Apart from the high prices for commodities which were a result of the depreciation of the currency, and were to that extent nominal, an industrial boom began in the belligerent countries which rested upon a very solid material foundation. It is a well-known fact that there is prosperity of trade and industry, with a good demand for commodities and labour,

rising prices, and high wages, in those periods when there is a greater capital investment than in normal times. It is the energy which is accumulated in capital that is liberated, and in such times more intense work must be done than in more quiet periods when speculation is dormant. But even under the wildest speculative excitement it is only a very modest sum of capital that is invested when it is compared with what has taken place during the war. Europe has opened the dams of its reservoir of capital, which has rushed out with the elemental force of the spring flood in our rivers when it thunders with deafening roar over the waterfalls. So much was to be done, such quantities of raw materials were used, so much labour was needed, that one single year of war is equal in activity to what happens during many years of capital investment in time of peace.

If this insane waste of the accumulated capital of our continent continues long enough, the reservoir will finally be altogether emptied. That is to say, all stocks of foodstuffs, of raw materials, and of half-manufactured and fully-manufactured goods will be very nearly exhausted. While the man who, in peace times, invests capital in a new undertaking, as a rule obtains in exchange for his capital a new material and revenue-giving asset, which he may use as collateral security when he requires credit, the activity of war creates no assets. Its object is to fire away as many projectiles as possible, and the only trace which they leave is a great hole in the earth. Upon such a hole one cannot borrow anything.

When the war is ended, the material foundation of credit, this mighty instrument in the service of production, will therefore have disappeared; for the stocks of raw materials which existed will have been very nearly consumed. In place of these stocks their previous owners will have bank-notes which will not be worth their face value, or Government bonds. Even on the supposition that all the States are willing to fulfil their obligations, and try to pay interest, the enormous amount of the indebtedness will compel the price of the bonds to sink. As foundation for credit, these obligations with a mortgage upon the production of the future will not be very serviceable.

With her capital resources emptied, Europe will, when peace

has at last been restored, find herself in a difficult situation, similar to that of the settlers on the American prairies, who were almost without any resources. It is possible to get along with a minimum of resources, but if a person who is thus situated shall dream of succeeding, he must work terribly hard, and deny himself almost everything which is not absolutely necessary for existence.

An improvement of trade, or perhaps a boom, will probably be experienced when peace has been concluded; but it will hardly last for a long time, whereas it is highly probable that it will take the greater part of a generation before the misfortunes and losses have been repaired, and the activity of Europe can again begin at full speed. It took fifteen years before Europe recovered after the Napoleonic wars, and these were mere child's play in comparison with this war. But, some reply, the technical skill of the world has been so highly developed that the losses may be repaired much quicker than in other times. This is true; but those who speak thus forget that an industrialized and highly developed country is a much more complicated and sensitive organism than the Europe with which Napoleon played havoc. If our modern indirect methods of production require so long a time, they cannot be utilized unless there is capital enough to finance the entire process from the very beginning until finished commodities can be sold. When Europe has been mad enough to destroy that capital, which had been accumulated by the savings of many years, there is no escape. To replace it, new capital must be accumulated after the same old-fashioned method, through savings; and until the loss has been made quite good, production cannot reach a greater volume than the existing capital will at each time permit. It is highly regrettable, but it is so.

The wages fund of Stuart Mill and the other classical writers has its basis of real fact in the working capital which must exist in a developed country to permit indirect production, instead of satisfying the consumption of to-day solely with commodities that are also produced in the same day. But this capital must be large enough not only to pay wages to the labourers, but also to sustain all others, including the capitalists, who take part in the indirect production, from the

beginning of the process until the finished goods are absorbed by consumption. It is physically impossible to carry an indirect production during a long period, unless there exists in society accumulated capital in sufficient quantity to hold the goods while they remain as raw materials or in the half-manufactured state. Remember, the manufacture of paper from cellulose consists of a series of separate and quite distinct productive operations. The forest owner is the capitalist who advances the wages of the timber cutters; he must have his outlay refunded by the cellulose mill, otherwise his capital will be locked up and he will be unable to cut timber the following year. The owners of the cellulose mill must have sufficient capital to advance both the outlay of the forest owner, the holding of the logs for a year, and the wages and other expenses of their business. They in turn must be refunded by the paper-maker, and so on. Part of the necessary capital is the property of the producers of the different series of processes; but a part they regularly borrow from the banks, to whom money is lent by other persons who either do not use their capital themselves, or who may temporarily have spare capital which they lend at interest instead of leaving it quite idle.

The essential thing to have constantly in mind, however, is, that somebody must be the owners of sufficiently large accumulated funds that all those who are engaged in indirect production can be supplied, during the whole time in which it is continued, with the necessary means of subsistence. For neither the logs nor the cellulose nor the paper can be eaten, or in any other way be used by their producers as a substitute for the commodities which they must have each day of the year to live.

Humanity has only by slow and gradual steps been able to accumulate sufficient capital, of which part is employed as fixed, part as floating capital, for materializing the many indirect and prolonged methods of production to which modern man is so largely indebted for obtaining the commodities which are needed for his daily consumption in such large quantities and at such low prices as ruled before the war.

The greater part of the working capital of Europe, as well as a good deal of that of the rest of the world, being wasted,

the generation which has to work after the conclusion of peace will experience personally something similar to the primitive conditions under which man of past ages had to conduct his production and satisfy his limited consumption.

The most pressing task to which mankind must set itself to work with all its might, as soon as the temporary boom has subsided, will be to replenish, by exercising the greatest economy, as fast as possible, the reservoir of working capital. Until this has been accomplished, there will hardly be any capital to spare for investment in new productive undertakings, or for granting European loans for the development of the resources of other continents. But when the regular stream of fresh accumulations for investment as fixed capital in new undertakings ceases to run, the many great establishments of various kinds, iron works, etc., which have done a flourishing trade mainly in products for capital investment, must either cease working altogether, or can only be run on a much reduced scale.

With the unavoidable and great contraction of production, there will be a correspondingly large reduction in the earnings of all classes. The consuming power will sink to a small fraction of the artificial height to which it has risen during the war, and fall much below the level which had been established before the war. This weakening of consumption will in its turn react upon production and reduce it still more.

While the economic conditions will thus be steadily deteriorating, in all probability during a long period of years, financial conditions will, if possible, be still worse. For the material foundation of credit will have disappeared because the States have borrowed from their citizens nearly all their material property. Under modern conditions purely personal credit plays a subordinate *rôle*. In the majority of cases borrowers obtain financial help against security, real property, shares, bonds, etc. The States have given the previous owners bonds in exchange for their property, and have piled up an enormous new debt upon the previously large public debt. They will be placed in this dilemma: either they must compound with their creditors, and thus reduce to a fraction the terrible burden which they have contracted, or, if they wish to fulfil their obligations, they must place an almost unbearable burden

of taxation upon their citizens. Whichever way out of this dilemma they may choose, it will tend to cripple the financial strength of their countries and greatly retard convalescence.

Not only will the price of the State bonds be depressed ; but in sympathy with them, and as a consequence of the great dearth of real capital, whether consisting of money or marketable commodities, the price of all securities, of houses, of factories, etc. etc., will sink to a level which nobody before the war imagined to be possible. Under such circumstances those who are fortunate enough to possess money or easily realizable assets, will be slow to part with it to purchase goods or property of an uncertain and declining value. The result will be that to obtain credit will be extremely difficult.

In one word, Europe will have been plunged by the war from comparative opulence into great poverty.

At the beginning of this period of reduced activity and general retrenchment, one must be prepared for great social upheavals. At first the working classes will no doubt try to maintain wages on the high level to which they have now been accustomed. If the employers demand reductions, the trade unions will try to respond with strikes and all the other means which have been so efficacious during a period of constantly growing prosperity. When this does not help there will probably be serious disturbances of public order. But even if the labourers killed, literally or figuratively speaking, the employers, they would be helpless in regard to the fact that the working capital has been reduced to a mere fraction of what it was. Capital may therefore dictate its conditions, as it is an indispensable condition in that work of reparation which must be done to make good the losses.

It is impossible to say how long or how short will be the time that will pass before the working classes, having knocked their heads against an impenetrable wall, at last come to realize the situation. But this understanding must come sooner or later. And then it is that the labourers will learn to do their labour with a high degree of efficiency. For conditions as to employment will be the same as they were at the beginning of the industrial era. At that time the new and improved methods of production which were introduced, actually threw out of employment many of the people who

had previously been engaged in domestic industries, and those labourers who were successful enough to secure employment in the mills were under constant fear of losing it. This fear compelled them to do all they could to satisfy the employers as to the sum of labour which they had to do. After the war similar conditions will prevail. Instead of that constant increase of the demand for labour which has characterized the last generation, and which has permitted the labourers to shirk their duties to a most shameful extent, this demand will during a long time be contracting. When this happens, those who have been lucky enough to find employment will fight as for their very life to keep their situation. For they will know that there are many miserable people standing outside the factory gates who will be only too glad if they are allowed to replace them.

There will be a very prolonged period of great scarcity of employment, with very low wages, and a high rate of efficiency. And things will not be less hard or exacting for the employers of industrial labour. The competition among producers to obtain a share of the greatly reduced sales in a market which will be compelled by poverty to restrict its purchases, will be terribly keen. Employers will be forced to study economy of production as they have never dreamed of doing before. No haphazard methods will any longer do ; scientific management of labour on the lines of the Taylor system, or similar plans will have to be introduced by all firms who wish to have a ghost of a chance of maintaining themselves in this fierce struggle for existence. The combined effects of the individual efforts of the labourers to improve their efficiency, and of the universal introduction of better management of business and labour, will be a widely diffused and very great improvement of the rate of efficiency. Wages being at the same time below the ordinary unit rate, the cost of production will be exceedingly low, and although the products must be sold very cheaply to find buyers, the rate of profit on capital will therefore be higher than the previous average.

Through a long and bitter school the working classes will learn to give their labour a high rate of efficiency, and at the same time to be economical. During the past thirty years the scale of living has become among all classes of society,

including the labourers, rapidly more luxurious and wasteful. Under the sobering influence of universal disaster and straitened means, intensified by the burden of an excessive taxation, the standard of life will be revised by employers not less than by their employees. If there is a good profit on the business, it will not be squandered on showy luxuries; but the greater part will be saved to form a highly welcome addition to the scarce capital, and it will be used to the best possible purpose for making the business undertaking more efficient.

Thrift and energetic work will be the characteristics of Europe after the war in all classes, with the determined purpose of repairing in the shortest possible time the devastations which the war has caused. When by degrees capital has begun slowly to accumulate again, and when consumption can likewise begin to increase little by little, a ray of hope will one day break through the dark clouds, and the rate of wages can at last begin to improve.

The only hope of saving the situation in a comparatively short period lies in the possibility that the labourers may learn tolerably soon to avoid or to reduce the enormous waste which has hitherto been occasioned by their inefficient labour. This has been a continuous loss to themselves in the first instance, and indirectly to the entire society—a dead loss, for nobody has benefited by it. If the 100 millions of wage-earners of Europe raise their efficiency only to the extent of making a day's work worth one shilling more than to-day, it makes 30,000 million shillings in a year, and adding 50 per cent. of profit, we reach a sum of 45,000 million shillings, or 2,250 million pounds sterling. This additional income of our continent would be sufficient to wipe out the war loans of the belligerent States in the course of only six or eight years.

To gain this great prize not a single one of these many wage-earners need overstrain himself. The only thing that is needed is to do the labour more intelligently and in a more conscientious manner. Humanity has an inexhaustible reserve of energy to draw upon by increasing the efficiency of its productive labour. The potentialities of this reserve are many times larger than the amount of the accumulated capital which has been wasted in the war.

That the working classes will be compelled to increase

greatly their efficiency during the period of dire trials which awaits them and all of us, may be predicted with a much greater degree of certainty than is generally possible with regard to events of the future. Whether they will also acquire in the same time something of the spirit for accumulating wealth which is the main secret of the success of the middle classes during the last centuries, is a more doubtful question. One might almost be tempted to express a hope that their and our common trials may last long enough to rub the saving tendency into them.

If the earnings of the working classes ultimately advance considerably above their old level, the labourers will do well to increase their standard of life much above their present one. But 50 to 100 per cent. higher wages will also leave a margin for savings; and as a labourer at the age of 25 years can generally earn almost as much as when he is 50 years old, he has, under ordinary circumstances, at least 25 years in which he may constantly add to his savings beyond the growth which will be due to interest. If all the 100 millions of wage-earners of Europe are placed in a position to lay by, say, Kr.100¹ each year from the time when they are 25 years old until they reach 50 years, and the money is invested at 5 per cent. interest, it will have grown to about Kr.5,400² when they are 50 years old. If they all did the same, the working classes would, twenty-five years from to-day, be the possessors of a capital that aggregated 540,000 million kroner, or, say, 30,000 million pounds.

Remember, I am not saying that this or anything like it is going to happen; but to the extent of their acquiring the propensity of saving something out of higher wages, the working classes will cease to be a proletariat, and instead they will take their place among the capitalists. It will be a socializing of the "means of production" in a different manner from that which Karl Marx advocated, and a very much better manner; for private management and individual enterprise will be continued, and without these there never has been and never will be any human progress.

¹ About £5 12s. 6d.

² About £301.

CHAPTER XVIII

CONCLUSIONS

No doubt the first ideas which were materialized were utilitarian. As man is so constituted that he cannot live upon things as he finds them in nature, necessity compelled him to use his imaginative power to discover means of production ; and the first being who roughly chipped a stone to materialize the vague idea of a tool that floated in his mind became, in so doing, the first man. But the oldest antiquities which have come down to us show that the power of conceiving artistic, moral, and abstract ideas was also from the very beginning included in the wonderful gifts with which nature has so richly endowed the human race.

Speculative excursions into artistic and moral problems have always had the strongest fascination for the human mind. They have frequently enticed man into wildernesses of errors and misconceptions. This has been the high price he has had to pay for his prerogative of following the fancy of his imaginative brain in search of the unknown.

These speculative efforts, whatever may have been their practical results, whether they have given man a clearer insight into the nature of the things which surround him, or have landed him in fatal illusions, have nevertheless all tended to train his mind, and have strengthened his imaginative power. Gradually they have added new ideas of a higher order to the simpler utilitarian ideas that had previously been conceived, and which were materialized in tools. The number of the ideas which are the common wealth of humanity thus constantly grows as a result both of productive activity and of artistic and abstract speculations. While man is mortal, the ideas which he has originated and communicated to his fellow men live for ever, and exercise an eternal influence by

moulding and determining the mental evolution of all those who subsequently receive and absorb them.

Each generation which has lived upon the earth since the first appearance of man has thus inherited a larger fund than the preceding one of utilitarian ideas, materialized in tools and productive methods, or artistic and moral ideas realized in musical tones, pictures, or words. The inherited ideas which irresistibly shape our mode of life, unlike the unchangeable organisms of nature, are constantly varying in form. Each new generation, while it is being acted upon by the ideas which it has inherited, also reacts upon them, and leaves them to the following generation differently refracted, more or less altered, and with new additions.

Thus, during his whole presence on the earth, man has by his imaginative power unceasingly created new images and conceptions which have had no previous existence and no parallel in the outer world, but which have become realities by his innate power of materializing them, or of giving them form in words, the symbols of his thoughts. From the very beginning of our race humanity has been constantly at work building that grand edifice of ideas which in their endless variety and innumerable combinations constitute the ever-growing sum of knowledge which is called civilization.

The very magnitude of the number, and the great diversity of the ideas, which at an advanced stage of evolution are the passing possession of each living generation, make it a difficult task to learn to know, receive, and assimilate them. To receive and assimilate conceptions which are developed beyond the range of materialized utilitarian ideas requires of the recipient a mental training which is not attainable for those who do not possess a certain minimum of material comforts. Such comforts are indispensable to give the leisure which is a necessary condition of developing the higher faculties of the brain. To be able to think in the abstract, the mind must be, at least to some extent, free from cares as to where the next meal is to come from.

The low productivity of human labour has in all past ages kept the majority of mankind in such great poverty that they had no time or opportunity for studying more complicated ideas, or to train their brains for abstract reasoning, or to

develop their imaginative power in the direction of creating new ideas. Utilitarian ideas which have been materialized in new and better tools or improved methods of production, speak even to the uneducated mind, and they exert a great civilizing power wherever they come, by stimulating the intelligence of those who make use of them. But the higher ideas which possess to the greatest degree the propelling power of evolution, and which are therefore the most valuable part of the great and growing inheritance of ideas that is handed down to us from our ancestors, have been up to our time like a closed book to the majority of the human race. Civilization in its richest, warmest, and most refined forms has been a privilege of the favoured few who also possessed material comforts as an exclusive privilege.

The unavoidable result of this exclusiveness has been that civilization up to now has always been more or less artificial.

It never gained the width, comprehensiveness, and solid foundation in the realities of life which it would have had if it had embraced all people, rich and poor alike. That is also the real explanation of the fact that so many of the religious and philosophic systems of the past have landed their authors in a labyrinth of the most curious misunderstandings and horrible hallucinations. Because of their ignorance the masses were unable to bring their common sense, the saving quality of the majority, to bear upon these obscure speculations. And worst of all, because civilization was a privilege of the few, the latter have invariably been tempted by their egoism to develop two codes of morals : an agreeable and easy one for themselves and their class, a hard and exacting one for the many.

Among the ancients the conception of liberty in the modern meaning, as the right of the individual to develop his personality without the arbitrary interference of other people, was quite unknown. Apart from the fact that slavery was the basis of all ancient civilizations, they absolutely subordinated the individual to their conception of the omnipotence of the State. The rich might to some extent emancipate themselves from the worst consequences of the laws that were based on this conception, but for the poor there was no escape ; and whether free or slaves they knew no real personal liberty, which to us

moderns appears as the first and essential condition of a truly moral organization of human intercourse.

The barbarians who overturned the Roman Empire had brought with them a fierce spirit of personal freedom ; but in the Middle Ages the feudal aristocracy which succeeded in usurping nearly all the powers which in the ancient world belonged to the State, finally crushed all liberties of the individual. For when it attained to its zenith no man in Europe was considered a freeman who did not belong to the feudal caste. All who were outside of it, the commoners, were not their own masters, but bondsmen in the eyes of the law. Their lot was a truly miserable one, because for centuries their lords were not in possession of any civilization, but were as ignorant as a rule as themselves. Knowledge and learning were to be found almost exclusively in the clergy, who developed that scholastic system of speculative philosophy which was as far removed from the realities of life as possible, and which to us moderns seems as dead as dry bones.

This system must nevertheless have possessed the quality of giving to its students a very good mental training, for otherwise the nations of Europe would not have been so well prepared for that remarkable progress of civilization which began in the fifteenth and sixteenth centuries.

It must, however, be remembered that just at this time the civilization of the upper classes was reinvigorated by a more intimate contact with realities. A serious study of nature was resumed for the first time since the best Greek period ; and science was called upon to assist as never before in finding new and better methods of production. The utilization of these new discoveries for the development of commerce and industries became the special task of the middle classes, who were at that time slowly emerging from the inarticulate and colourless mass of the common people. The middle classes, who soon began to accumulate wealth and to acquire importance, developed at the same time a civilization of their own, different from that of the aristocracy as well as from the learning of the clergy ; and this made them feel keenly the injustice of the political and social inferiority to which they were doomed by the feudal organization.

The intelligence of the middle classes, which was sharpened

by their business contact with the daily problems of life, their growing wealth, and the increasing influence of their position, opened for these classes opportunities of raising a powerful agitation against the privileges of the upper classes, and for their own rights of political and social equality. By their fight for these rights, which lasted for centuries, and is in some countries not yet ended, they have started a moral movement which is destined to have ultimately the most far-reaching consequences. They have never, like the nobility, formed an exclusive caste; they have sprung originally from the common people, and they have constantly been freshly recruited by an influx from the agricultural population and the working classes. They form a minority of the whole population; but they are much more numerous than the upper classes were, and thus, when gaining the liberty of the individual for themselves, they increased very largely the number of those who possessed the inestimable advantage of having an active share of the common human civilization. Although at first they spoke only in their own behalf, when claiming justice, they were driven gradually by the logic of their case to employ arguments which had universal application, and pointed towards the ultimate enfranchisement of the entire nation from bondage, and from the prerogatives and prejudices of the privileged classes, the Nobility and the Clergy. The climax of this great crusade of the middle classes against the unjust power which the few held during long ages over the majority of the nations, was reached when the French Revolution proclaimed *Liberté, Egalité, Fraternité!*

The revolution miscarried, which cannot surprise us when we consider the shallow and dogmatic character of the philosophy of enlightenment, the ideas which the revolution was intended to materialize, and the gross ignorance of the lower classes of that time. The middle classes who had stage-managed the revolution were staggered when they saw how it developed, and they hailed the new Cæsar as a saviour.

But a new idea had been expressed. It has become a living force in human evolution, and can never again be removed. It has the same power of kindling the imagination and rousing the enthusiasm of man now as it had on the day when the

Declaration of the Rights of Man was issued. In the dusty libraries which preserve the arguments that were once used by the middle classes to win and defend their rights, the working classes of to-day may still find useful weapons for attack and defence in the fight which they now in their turn carry on for obtaining the very same rights. All attempts which the middle classes have since made, and in some countries still make to put obstacles in the way, and to prevent the full political emancipation of the working classes, have proved and will prove futile. Such a movement, once started, cannot be prevented from finally reaching its predestined goal.

Political rights are one thing; to reach a status of full equality in social life is a different matter altogether. The French Revolution would not have benefited the working classes of Europe very much, had not the Industrial Revolution of England at the very same time changed entirely the conditions of production. This latter revolution came as the ripe fruit of the gradual evolution of science during the preceding centuries, and of the steady development of the commerce and industries of England which was the result of her free constitution and her command of the seas.

The French political, the English economic revolution, and the emancipation of the middle classes came to pass much more as the final outcome of the preceding evolution and of the inherent energy of new and life-giving ideas than as the consequence of the actions of the so-called leaders. As a rule, their qualification mainly consisted in the happy circumstance that they were present at the time when the events in which they took such a prominent part were due to happen. And that the middle classes brought home their victory was the reward for their having received and assimilated the ideas that decided the evolution, particularly the idea that they had not only rights but also duties.

From this the working classes must learn. Their material and moral conditions have been much improved during the time which has elapsed since the French Revolution. In most of the countries which are inhabited by the white race, general and compulsory education has been introduced. It is not nearly so good as it might be; but, for the first time in the history of the world, entire nations have now obtained the

opportunity of learning to read and to write. What an immense step forward in the direction of preparing them for the reception and the assimilation of the ideas which enshrine our civilization ! Industrial and commercial activity have been so much increased, so many men of the keenest intellect have embodied their new and fruitful ideas in machinery and buildings of all kinds, that these in themselves are the most instructive object lessons, which may tend to develop the reasoning faculties of the millions who are brought into daily contact with them. The newspapers constantly disseminate in a popular form the leading ideas of science, and new ideas of ethics and morals. Wages are not as high as the friends of the working classes might wish them to be ; but they are much higher than in the past ages, while hours of work have been constantly shortened. The working classes of to-day have therefore opportunities of self-education such as have never before been open for people of their class.

And the middle classes have not been satisfied by having won political and social rights for themselves, but the majority of people who belong to this class, and decidedly their best elements, have long been labouring enthusiastically and loyally for the intellectual and moral uplifting of the majority of their nations. They have been filled with the grand idea of liberty and equality so much, that it has completely moulded their entire conception of life ; and they are looking forward with bright hope to its general and glorious realization.

The working classes, if they will open their eyes and look without bias on the world of to-day, must acknowledge that everything is working in their favour, and that they have good and strong supporters of their cause when they strive for obtaining full citizenship and co-partnership in the great inheritance of humanity, the ideas of our civilization. But they will never reach the Promised Land unless they fully learn to appreciate the great truth that citizenship means not only rights, but quite as much corresponding duties. In a community all are servants of the whole, whether our individual position is that of a capitalist and employer, or a labourer and wage-earner. The final victory of the working classes will be, like all progress of civilization, an intellectual and moral victory over their own bad habits and shortcomings. When

that has been gained, all the rest will follow as a matter of course.

Not before the entire population has grown to participate in the great inheritance of intellectual and moral ideas which constitute our civilization will human culture cease to be artificial, narrow-minded, and egoistically bent by the few, who have the exclusive privilege of it. Only when poets, musicians, and artists have the entire nation as their patrons can they be inspired to produce their very best ; religious and philosophic teachers will not easily go far wrong when everyone is able to read and control what they write ; and the intellectual joy of knowledge itself will be many times enhanced when we have the feeling that we share it with all our fellow men and women.

Europe with its many nations and races who all speak different languages, with its old quaint cities, and its old-fashioned diplomacy and many curious old-fashioned customs, with the different classes who live side by side without mingling ; in short, this very old Europe, which is the final product of centuries of warfare and of thought, of changes innumerable and of conservatism, reminds one of some of the fine old English castles. Their oldest parts may date from the Normans ; they were rebuilt during the Renaissance ; they have constantly been added to and altered by successive owners, and recently electric light and modern sanitary arrangements have been laid in, making them with their parks and well-kept lawns the most delightful and attractive abodes of man. But in spite of all changes they retain that wonderfully fine incrustation with which time only can embellish the works of man. Let me relate an anecdote which I once read. A self-made American millionaire visited one of these castles, and, greatly admiring the lawns, he went up to a gardener who was rolling the grass, asking how he might obtain similar lawns at his house in America. "Well," was the reply, "cut the grass and roll it, as I am doing now ; keep on doing the same for a hundred years or more, and you will get it."

There is not much of this kind of incrustation yet on things in the New World ; but in its place they have won something else which is equally valuable. Being unfettered by feudalism,

class distinctions, and old-fashioned institutions, the Colonies were free to build up a democratic commonweal in which a man was respected, not because of his parentage or social advantages, but in proportion as he did good honest work and was a useful member of his community.

Continuity, traditions, differences of temperament and customs, which have their roots in the far-away past, give life, variety, and colour. A democracy, when fully developed as in the New World, opens up for everyone the prospects of success, and infuses an amount of energy and enthusiasm into the entire people which is unknown in the more easy-going Old World. The two great sections of the white race, those who have remained in their old homes, and those who have peopled the other continents, have therefore much to learn of each other; and the civilization of the future will probably be a more or less happy blend of the qualities of both.

The United States have already been a most powerful school of democracy for Europe. Millions of people have left their homes to emigrate to the States. Their letters to their relations, and their visits to the old country, have already exercised an influence on the common people of Europe which it is quite impossible to overrate. The other day I saw a large number of Russians who passed Christiania on their way from America to their own country. They were quite Americanized, smartly dressed, and looked entirely different from what they may be supposed to have been when they first went to the great Republic.

The remarkable capacity of the Americans for assimilating and completely changing the many awkward elements of strange races which they have absorbed in such a short time will contribute greatly to make the population of the Old World more democratic.

The tendency of business is working in the same direction. Races, languages, creeds, customs, and all local forms of civilization have always had a tendency to make people exclusive, suspicious of strangers, and conservative. These are precisely the conditions under which it has been possible to maintain so many of the unjust privileges and prerogatives of the favoured few which still abound in so many parts of Europe. The nationality movement, although it has had its historical

mission, is in its innermost roots reactionary, and has contributed largely to keep alive animosities among the various countries which are quite antagonistic to the best and most promising ideas in modern civilization, which distinctly point to a future when there will be mutual understanding and warm sympathy between the nations. It is this antagonism upon which the Protectionist policy of economic war of all against all has been allowed to thrive, to the great detriment of the consumers for the supposed benefit of the producers, particularly the big ones.

But business is essentially international; and commerce, which has made such enormous progress during the last generation, has not troubled itself much about frontiers. It has passed over the highest tariff walls, and it has been busy weaving a network of strong economic interests which has bound the many nations of Europe, and of the entire world, closer and closer in a bond of the strongest economic and financial community. The friendly feelings of mutual helpfulness, of dependence upon each other, with demands of exchange of products and of reciprocal services, must in the long run act as an irresistible solvent upon unfounded suspicions and unreasonable national animosities. Unrestricted international trade is the most potent factor in the cause of peace and goodwill among the nations. There is no permanent danger in keeping up the many national states of Europe, the petrified results of the historical evolution of the past, provided commerce is allowed free play to make of our continent an indissoluble economic unity.

Innumerable and conflicting forces, old and new ideas mingled, external and internal influences, have been at work during the last few generations to recast the civilization of the white race in the Old as well as in the New World. That the results have not yet become fully harmonious is not to be wondered at. For the industrial revolution which began in the second half of the eighteenth century has so completely changed the productive and economic conditions of human existence that nothing can properly be compared to this change except the productive revolution which took place when man substituted metals for stone as the material of his tools. What is really a marvel is the wonderful elasticity of the human

mind which has made it possible for humanity to undergo this transmutation in such a comparatively short time, without far more serious social and economic catastrophies than have actually accompanied this immense change.

The steady current of the democratic movement which was gradually transforming the social structure even in the conservative Old World, has, however, now been broken by the cataclysm of the horrible World War which is still raging and devastating Europe.

During many years civilization has been constantly threatened by the never-ceasing menace of the aggressive military system of the Hohenzollerns. How very real this danger was can best be measured by the immensity of the forces which have had to be mobilized to meet the "mailed fist" of the Emperor William.

In a previous chapter I have attempted to describe the process by which the Hohenzollern dynasty have, during the five hundred years of their rule in the half Wendic Brandenburg, educated first the Brandenburgians and the Prussians, afterwards the entire German nation, to become a conquering military people of the same stamp as the military states of antiquity. This country which is the stronghold of the remnants of the feudal nobility of the Middle Ages, was an anachronism, a survival of the anti-democratic tendencies of past ages, in spite of its marvellous commercial and industrial renaissance of the last forty years. The Germans boast, and they undoubtedly believe what they are saying, that they are the only cultured people in the world. They really thought that they were destined by Providence to become, as the Romans of old, the masters of the whole world. *Pax Germanorum* should be the modern rendering of *Pax Romanorum*. In their efforts to make this dream a reality they have thrown down their gauntlet, not to one or two nations, but to the whole of humanity; and not only the soldiers on the battlefield, but innumerable spies and incendiaries in neutral countries have committed in the name of "Kultur" the most brutal atrocities.

The gauntlet has been taken up, however, and the result of the war which the Emperor so lightly declared is a foregone conclusion. The world will be saved for ever from the possibility of falling under German dominion. The Hohenzollern

dynasty and their ally, the cruelly despotic Habsburg dynasty, will be swept away to return no more. What the future of the German nation itself will be, is more difficult to forecast. It will depend upon how far it will be able to rid itself of the poisonous ideas with which its rulers have filled the overheated national brain.

The war itself, just as it has been the most immense business undertaking of which there is any record, so it has also evoked, to an extent which no one could have dreamed, the energy, gallantry, and enthusiasm of the millions of civilians of all nations who have been suddenly called upon to be soldiers in defence of their homes and liberty, and their very right to exist. The population at home has been enlisted as well as the young men who have gone to the front. While having to submit to the greatest privations, they have had to exert themselves almost to the breaking-point in order to keep things going and supply the armies. The efficiency of labour in the belligerent countries has risen in a marvellous way. Women have taken their place by the side of men, or in place of men, both in the munition factories and in the ordinary walks of civil occupations.

Never before in the history of our race has there been a similar, close, intimate, and hearty partnership and co-operation between different nations as the one which has bound the Allies together during this long war. France has once more splendidly demonstrated her right to take the lead in the forward march of civilization, and has abundantly proved that she was not, as the Germans fondly believed, a degenerate nation. The British Empire, which the Germans hoped would at once fall to pieces, has shown that it is more than a sounding name. The Anglo-Saxon race of all the Colonies has rushed to the assistance of the mother country. And the great democratic Republic of North America has thrown the immeasurable weight of its resources into the scale. Russia has shaken off the yoke of its autocratic Czardom, and its revolution will advance most powerfully the cause of democracy in all countries. Little Belgium will receive full compensation for the material losses she has suffered, and she has for ever gained the admiration of the world, like Serbia and Montenegro, by their heroism.

The war and the great cause of defeating the wanton

aggressor has, during these years of intense excitement and superhuman efforts, bound nearly all the nations of the world together in one purpose. The effects of this temporary and compulsory union will not disappear, when the war is over, and peaceful conditions have once more been established on this little globe of ours.

Many misunderstandings, many national and racial animosities will for ever have disappeared from international intercourse. And similar influences will make themselves felt within the different nations that have taken part in this Ragnarök. When the millionaire and the poor working man have been together as fellows in the trenches for months or years, sharing equally dangers, discomforts, and honours, they can never meet again in civil life on quite the same standing as before, and when an unsurpassable chasm of social distinction and stupid social animosities separated them. The levelling and democratic influence of this big war will contribute very much to make social intercourse as well as political institutions in all European countries much more democratic than they were before it commenced.

But after all, democracy, as all other moral improvements, must come from within, although external influences may help or retard it. The belligerent countries will have as some recompense for all their sacrifices this advantage over the neutrals who have been spared from the losses, that their working classes after the war are likely to increase their efficiency of labour much more rapidly than their fellows in the neutral countries. For not only has efficiency of labour in the belligerent countries increased very considerably as a result of the pressure for war materials, but the management of industrial concerns and of labour has been revolutionized to an extent of which people in other countries can have no proper idea. And this increased effectivity of methods and efficiency of labour will be permanently retained.

This war has done more than anything else could have done in such a short time to intensify man's imaginative power of creating new ideas, and by causing an immense movement in the entire mass of humanity it has likewise given new and old ideas a much more rapid circulation and intensity of influence than ever before.

Among the ideas which have been slowly gaining ground in the past two or three generations was that of the unity and solidarity of the whole human race and of the human mind. The war has had one curious and unforeseen consequence. The relative importance of Europe as the ancient seat of culture and economic power has for some time been slowly and almost imperceptibly decreasing because of the growing importance and development of the other continents.

This tendency will be very considerably strengthened as a result of the war. Not only will the further economic progress of our continent be delayed by the enormous loss of capital and life which the war causes, but the participation as active partners in the war by the United States, the self-governing British Colonies, India, and Japan, will increase to an enormous extent the political importance of that greater part of the world which is situated outside of Europe. One of the most difficult problems of the future will be to find a way of arranging in a more satisfactory manner than hitherto the relations between the white race and the other races, which also belong to the great human family of *homo sapiens*, and to the solution of this problem the war will also have contributed.

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