SELECTIONS AND DOCUMENTS IN ECONOMICS

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SOCIOLOGY AND SOCIAL PROGRESS

A HANDBOOK FOR STUDENTS OF SOCIOLOGY

COMPILED BY

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PREFACE

The problem of human welfare, before which all others seem trivial in comparison, is not to be understood without the widest attainable knowledge of things pertaining to man. Up to the present time the economist is undoubtedly the one who has made the most searching and the most effective study of this problem. But other light is needed and a wider view is necessary than the economist is in the habit of taking. The present volume is compiled for the purpose of presenting to the student, in convenient form, material for this wider view. It is based upon twelve years of college and university teaching. The selections presented are those which the compiler has found by experience to be the most instructive, the most stimulating, and the most thought-provoking. No attempt has been made to select only such passages as embody the compiler's views, or even to select such as are invariably sound and accurate. The fact that a passage has proved brilliantly suggestive and provocative of serious inquiry has, in several cases, been the chief reason for including it.

It is the hope of the compiler that this volume may prove useful both to the college student and to the general reader. In college classes it is designed to be used as supplementary to an elementary text-book, as collateral reading to a course of lectures, or as a basis for class-room discussions. The latter is by far the most effective method yet devised for the teaching of the social sciences, and in connection with this method the compiler ventures to hope that this volume may prove especially useful.

The compiler wishes to express here his gratitude for the many courtesies which he has received from authors and publishers. He is under especial obligation to Messrs. D. Appleton & Co.,

A. C. Armstrong & Co., Adam and Charles Black, Albert Fontemoing, Henry Holt & Co., Houghton, Mifflin & Co., the Macmillan Company, James Pott & Co., and Charles Scribner's Sons; also to the editors of the *Political Science Quarterly*, and of *The Annals of the American Academy of Political and Social Science*, and to the following gentlemen: Professors Simon N. Patten, Lester F. Ward, Edward Van Dyke Robinson, and William Z. Ripley, and Messrs. A. Cleveland Hall and D. MacGregor Means.

He wishes also to acknowledge his indebtedness to many of his former students, whose interest and enthusiasm, whose criticisms and suggestions in the regular class-room discussions, and whose stimulating — often puzzling — questions, both within and without the class room, have been a guide in the selection of the material for this book.

T. N. CARVER

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SOCIOLOGY AND SOCIAL PROGRESS

I

INTRODUCTION

It is only partially true that sociology is a new science. It is true that the name has only recently been applied to a definite body of knowledge, and it is still more recently that there has been a group of scholars devoting themselves exclusively to this subject and going by the name of sociologists. But it is not true that human society, the subject of sociological study, has only recently attracted the attention of students. On the contrary, it is one of the oldest subjects of inquiry and speculation. The philosopher, the theologian, the moralist, the man of science, and the economist have all devoted time to this subject, and each has made his contribution to it. Indeed, it is the opinion of many students in this field that some of the most significant contributions to our knowledge of society have been made not by writers who profess to be sociologists but by men who have turned their attention to those phases of social life which lie nearest their special fields of inquiry. Such writers have not occupied themselves with problems of nomenclature and classification, but have saved their energies for matters of more vital concern, whereas many of our formal treatises on sociology have been largely concerned with matters more formal than vital.

This is not to belittle the importance of the formalities of science. Classification, nomenclature, and description have their value; nevertheless, the student of society is only incidentally interested in such matters. His knowledge is not materially

increased by attempts to explain what society is like. He has a fairly definite idea already, though he may not be able to state his idea in specific terms. But, as Professor Marshall reminds us, our most familiar concepts are frequently the most difficult to define. It is very difficult to define a house, yet most of us have a fairly clear idea as to what a house is. One might add that, even if a house could be defined, the definition would add little or nothing to our knowledge. The same may be said of a definition of society. Since our science deals with a subject which is so familiar, at least in its superficial aspects, to every student of mature mind, its formalities are rather less important than those of some of the other sciences where the subject-matter lies outside the experience and observation of everyday life.

After all, the student of sociology is most vitally interested in gaining a knowledge of the social processes and the relations of cause and effect among social phenomena. This knowledge is absolutely essential to any intelligent effort at social improvement, and social improvement is the only worthy aim of the student. Even the early history of society and the origin of social institutions, interesting as these subjects are to the scientifically curious, derive their chief value from the light which they may throw on the problem of social improvement. But more valuable even than historical study is the analytical study of the social processes and the social forces which are at work in the society of the present, and which may be assumed to be shaping the society of the future. Any attempt to improve the society of the future must manifestly work in harmony with these forces.

It is probably safe to say that the economist is the only one of the various students of society who has accomplished much in the way of perfecting this analysis. On the purely economic side of social life considerable progress has been made in this direction, and it therefore seems probable that the method of sociology will be an expansion of the method of economics. The success with which the science of economics has been developed has been partly due to the fact that economists have strictly limited the scope of their inquiry. This was a necessary feature

of their method, at least in the early stages of the science; but the interest of the public in some of the broader aspects of social science is increasing day by day, and it is proper therefore to raise the question whether the time is not ripe for an expansion of the method of economics into the general field of social science.

It is a favorable sign that economists are already showing a tendency to take the broad view, or to consider the bearings of economic facts and principles upon the broader questions of human progress and social development. In so far as sociology has as yet justified its existence, it is because sociologists have emphasized these broader questions more than economists have seen fit to do. However, the chief danger is that if sociology is to be developed from the economic standpoint, and by an expansion of the method of economics, the purely economic factors will be overemphasized. This seems to have been the result of most attempts at what is called the "economic interpretation of history."

One who is acquainted with the ordinary meaning of words, but unacquainted with the way this particular expression has actually been used, would probably infer that the "economic interpretation of history" meant the interpretation of historical development in the light of economic knowledge, just as the historical interpretation of economics means the interpretation of economic conditions in the light of historical knowledge. But a brief examination of those works which have attempted the economic interpretation of history reveals the fact that this expression means that economic factors have largely determined the course of history. This is the dogma, for example, to which Professor Seligman[1] applies the following thesis.

> The existence of man depends upon his ability to sustain himself; the economic life is therefore the fundamental condition of all life. Since human life, however, is the life of man in society, individual existence moves within the framework of the social structure and is modified

[1] Edwin R. A. Seligman, The Economic Interpretation of History, New York, Columbia University Press, 1902.

by it. What the conditions are to the individual, the similar relations of production and consumption are to the community. To economic causes, therefore, must be traced, in the last instance, those transformations in the structure of society which themselves condition the relations of social classes and the various manifestations of social life.

In so far as this statement of the thesis foreshadows the subsequent argument it occurs to one as being singularly inconclusive. One might as well say the existence of man depends upon his ability to reproduce himself, and family life is therefore, etc.; or the existence of man depends upon his ability to defend himself, and military life is therefore, etc. Thus one might go on indefinitely adding to the number of causes which "in the last instance" determine the forms of social development. If it be retorted that the methods of gaining subsistence largely determine the forms of family and military life, the reply is that the forms of military and family life and the necessities of military defense also largely determine the forms of industry. The sexual impulse is quite as elementary as the desire for food, and it is to this elementary impulse that we owe the existence of the family, though its form is more or less modified by the conditions of subsistence, as well as by the spiritual, the moral, and the military conditions of the community. As to which precedes in point of time, it would be difficult to say, and the answer would be of no value even if it could be found out. The necessities of military defense, as Spencer has well brought out in his antithesis between the industrial and the militant types of society, are quite as potent in the determination of social forms and usages, and religious and moral ideas and conceptions, as the necessities of subsistence can possibly be. Here again the question as to which precedes in point of time — the necessity for subsistence or the necessity for defense — is a matter of no consequence.

Whatever merit there may be in the dogma that the economic factors have the leading part in shaping social development and in determining the course of history, and whatever the emphasis that may properly be laid upon this dogma, there is another aspect of the "economic interpretation of history" which deserves especial consideration, and which has been largely neglected in

discussions of this topic. As has already been suggested, the "economic interpretation of history" would seem, at first sight, to mean the interpretation of historical facts in the light of one's economic knowledge. If for the term "economic knowledge" could be substituted "knowledge of human society," this statement of the doctrine would clear up much of the obscurity which exists regarding the relation of the study of economic and social conditions to the study of history. Hitherto the field has been left practically in the hands of the historian or the historical economist, who has claimed that a knowledge of history was essential to the understanding of the present economic conditions. It is true in a much stricter sense that a knowledge of the present economic and social conditions is essential to even the most elementary knowledge of history. What has been overlooked in the modern evolutionary theory of history is the fundamental principle which formed the basis of the whole evolutionary theory of modern science, namely, the principle that all past development, whether in the field of geology or biology, must be accounted for on the ground of forces and factors now at work, and which can be observed at first hand by the student. Thus a preliminary study of dynamical geology, since Sir Charles Lyell, must precede any attempt at tracing geological history. If we accept the anti-cataclysmic theory of history as the basis of a theory of historical development, we must likewise conclude that a study of the social factors and forces as they exist in the world about us must precede any attempt at the explanation of historical development. One might as well undertake the study of paleontology without some preliminary knowledge of biology as to undertake the study of history without some preliminary knowledge of economics or sociology. It is in this study of first-hand materials, in the observation of social activities about us, that we must get our clue to the relation of cause and effect in social and political affairs; and until we have this clue, historical facts are merely so many isolated and unconnected events. The only thing that has saved history in the past from being a mere collection of accidental, unrelated events is the fact that historians, even without special training, have had some ideas regarding causation in social and political

affairs. But this general knowledge which we call common sense, and which belongs within certain limits to every intelligent person, cannot take the place of trained observation and scientific methods of investigation. A student of paleontology might, from the few general and elementary facts which he had gathered by unscientific observation, do something in this field, but he could by no means expect to compete with the student who had made a study of biology according to scientific methods, and who had some training in scientific observation and reasoning. This is the theory of the economic or social interpretation of history to which we must finally come if we would deserve to be put in the same class with scientists working in other fields. The study of sociology must therefore be the study of the social factors and forces as they are found in the world about us; and this study will bear the same relation to history that the study of dynamical geology bears to historical geology, or as the study of biology bears to paleontology. To be sure, historical geology and paleontology again throw new light upon dynamical geology and upon biology, but it is perfectly clear where the study must begin. The same principle will apply to sociology and history, and to theoretical and historical economics.

That line of study which is ordinarily called economic theory differs from economic history not in the methods of reasoning employed but in the source of information. The one goes directly to the facts of the social and economic life of the surrounding world, while the other goes to historical documents. The one observes phenomena at first hand, the other through the media of historical records of all kinds. The distinction between the theoretical and the descriptive economist is that the one tries to find the causal connection between economic facts which come under his observation, while the other merely tries to describe them. Until one has some elementary notions regarding economic causation he is not in a position even to begin the study of economic history. He would see no more connection between a rise of British consols and Napolean's defeat at Waterloo than he would see between Napoleon's defeat and an eclipse of the moon. But an opinion regarding economic causation is an economic theory.

What economists and historians need, therefore, is not an opinion as to the relative importance of the various factors which have determined the course of history, but a clear perception of the importance of a first-hand study of the factors and forces in the contemporary social world. Following the suggestion of the anti-cataclysmic theory of geological and biological development, the present writer would like to lay down the following thesis as a challenge.

Every great historical epoch and every variety of social organization must be explained on the basis of factors and forces now at work, and which the student may study at first hand.[1]

Our conclusion as to the relation of sociology to economics is, therefore, that sociology is merely an expansion of the method of economics to include a study of many factors in social development which are not ordinarily considered by the economist; while the relation of sociology to history is the same as that between dynamical geology and historical geology, or between biology and paleontology. Sociology is a study at first hand of those factors and forces which govern social phenomena and the relation of cause and effect among them, whereas history is an attempt to trace the actual course of social development in the past. Though the study of history is highly essential to a thorough understanding of the principles of sociology, a knowledge of the principles of sociology is vastly more essential to any thorough understanding of history.

It is the opinion of the present writer that whatever aid the study of sociology may furnish to the study of the history of the past, it can hardly justify its existence unless it furnishes us a theory of progress which will enable us to shape the policies of society with a view to future improvement. In other words, the fundamental task of the sociologist is to furnish a theory of social progress.

The first difficulty in the way of the student bent upon the performance of that task is that of defining progress itself. Generally speaking the idea of human progress carries with it

[1] Cf. the author's article on the "Economic Interpretation of History," *Journal of Political Economy*, Vol. II, No. 1, pp. 93–99.

the idea of human well-being. Social progress and social improvement, from the standpoint of human happiness, are ideas so closely connected in the popular mind that it is almost impossible to separate them. However, the late Herbert Spencer[1] combats this conception as being shifting and indefinite, and denies that the improvement in the well-being of the people is necessarily a mark of progress. "Social progress," says he, "is supposed to consist in the making of a greater quantity and variety of the articles required for satisfying men's wants, in the increasing security of person and property, in widening freedom and action; whereas, rightly understood, social progress consists in those changes of structure in the social organism which have entailed these consequences. The current conception is a teleological one. But rightly to understand progress we must understand the nature of these changes considered apart from our interests; cease, for example, to regard the geological modifications which take place in the earth as modifications which fit it for the habitation of man, and as therefore constituting geological progress. We must ascertain the character common to these modifications, whether in the physical, the biological, or the social world, — the law to which they all conform." His idea therefore is that there must be one universal law of progress which dominates the development of the physical universe out of primeval chaos, the development of the present highly diversified forms of animal and vegetable life out of the primordial cell or protoplasm, and the development of the present highly organized human societies out of the primitive horde of human beings. This universal principle of progress is simply the change from homogeneity to heterogeneity. "From the earliest traceable cosmical changes down to the latest results of civilization we shall find that the transformation of the homogeneous into the heterogeneous is that in which progress essentially consists" (page 10, *op. cit.*).

That a universal principle of development is desirable, in fact essential, as a basis for a theory of social progress must be admitted. But it seems that such a principle can be found

[1] Progress, Its Law and Cause, Vol. I, "Essays Scientific, Political, and Speculative," pp. 8–62.

without sacrificing the idea of well-being as a mark of progress. Back of this change from homogeneity to heterogeneity lies the principle of adaptation so familiar to all students of evolution. Now adaptation in human society is necessarily connected with well-being. A society which has undergone such modifications internally and externally as adapt it to its conditions is a society which enjoys a high degree of well-being; and the society which is ill-adapted to its conditions is a society which does not enjoy a high degree of well-being. While the term "well-being" can be applied only within the field of sentient life, "adaptation" is a term which may apply to all existence, sentient or nonsentient. But within the sphere of sentient existence adaptation and well-being are so inseparably connected that they may almost be said to mean the same thing. Therefore it is assumed in this work that well-being is a mark of progress, though progress is defined in terms of adaptation.

This adaptation which takes place in human society is either passive or active. By passive adaptation is meant the modification of the species itself to suit the conditions under which it lives; and by active adaptation is meant the modification of the conditions to suit the species. Man has been defined as a being who adapts his surroundings to himself, whereas other animals are adapted to their surroundings. If, for example, the climate is cold, other animals must develop fur, or blubber, or feathers, or some other means of withstanding cold or protecting themselves from it; whereas man manufactures clothing, builds a fire, or constructs a house. If food is to be obtained from the sea, other animals must develop webfeet, or flippers, or some other means of propelling themselves through the water: whereas man builds a boat and makes fishing tackle. If food is to be transported long distances, other animals must, like the pelican, develop a pouch, or like the camel, develop a hump and a stomach lined with cisterns; whereas man learns to cure his food and to build transportation systems. If the opposite sex is to be won, other animals must develop brilliant plumage, or antlers, or a mane; whereas man substitutes the barber's and the haberdasher's arts, clothes himself in fine raiment, or furnishes economic support.

In a multitude of other ways man, by taking thought, — by various ingenious devices, — avoids the necessity of being himself physiologically modified to suit his conditions. However, this difference, great as it is, is a difference of degree, for within narrow limits other animals also modify their surroundings, as when birds build nests or beavers construct dams or mud houses, and even where certain animals dig their own burrows instead of depending upon natural caves. But the efforts which the most ingenious and intelligent of the animals make in this direction are unworthy of comparison with the magnificent results of the genius of civilized man. On the other hand, men themselves have to undergo certain modifications. Races dwelling in high altitudes, who must breathe a rarified atmosphere, develop larger lung capacity. Those dwelling in cold climates develop better circulation and greater power of withstanding cold. Similarly, inhabitants of malarial regions develop a kind of immunity from malaria. But the degree of modification which takes place in the human organism is vastly reduced by man's power over his environment. If he were unable to construct shelters, build fires, and manufacture clothing, he would have to undergo vastly greater modification than is now necessary in order to live in such cold climates as are actually inhabited. Again, it might be urged with some degree of fairness that it is due to a kind of passive adaptation that man is enabled to assume the active rôle; that is, it is due to a larger brain development, and therefore he is passively modified in one direction, namely, in the direction of larger mentality, in order to avoid passive modification in other directions. However, the meaning of the term "active adaptation" is probably well enough understood to answer the purposes of this discussion.

In the analysis of the factors of social progress it seems wise to subdivide the work on the basis of a classification of those factors. We shall therefore group the selections included in this part of the work under four heads: (1) the physical and biological factors; (2) the psychic factors; (3) the social and economic factors; (4) the political and legal factors.

Under the first group of factors we are able to supply a list of selections which cover the ground fairly well. Under the second

group, namely the psychic factors, the material is fairly complete, except that no very satisfactory selection was found covering a most important psychic factor, namely, the power of idealization. This may be defined not very inaccurately as the power of *making believe*, — a factor which sociologists have scarcely appreciated as yet. We have such popular expressions as "making a virtue of necessity," which indicate that there is a certain popular appreciation of the real significance of this power, but we have very little in the way of a scientific appreciation of it.

One of the greatest resources of the human mind is its ability to persuade itself that what is necessary is noble, or dignified, or honorable, or pleasant. For example, the greater part of the human race has been forced to live under conditions of almost incessant warfare. War being a necessity from which there was no escape, it was a great advantage to be able to glorify it, to persuade themselves that it was a noble calling, — in other words, a good in itself. In the first place, this tended to relieve the mental distress which must otherwise have been the lot of those living in constant apprehension of so hideous and in every way loathsome a thing as war. Again, the strength of any given tribe in warfare would be greatly increased by the fact that war had been glorified and the warrior held in high honor and esteem. This would make better warriors of its honor-loving men. It would make war the goal and ambition of its youth. While for the human race as a whole this doubtless worked incalculable harm, yet for each individual tribe, being unable to free itself from the necessities of war, this was a great resource.

Another example is found in the case of work. Work is still a necessity as imperious as war ever was. Looked at frankly and truthfully work is a disagreeable necessity and not a good in itself. Yet by persuading ourselves that work is a blessing, that it is dignified and honorable, our willingness to work is materially increased, and therefore the process of adaptation is facilitated; in other words, progress is accelerated. Among the most effective agencies for the promotion of progress, therefore, must be included those which stimulate this power of idealization. He who in a warlike age can glorify war materially increases the

military strength of his nation. He who in an industrial age can glorify work materially increases the industrial strength of his nation. In short, he who in any age helps to idealize those factors and forces upon which the progress of his age depends, is perhaps the most useful man, the most powerful agent, in the promotion of human well-being, even though from the strictly realistic point of view he only succeeds in making things appear other than they really are. From the sociological point of view this is the mission of art and preaching of all kinds.

Under the social and economic factors the greatest difficulty was the absence of any satisfactory selection covering what may be called the storing of surplus energy. It is well known that nature everywhere seems intent on producing a kind of equilibrium or balance. Grass tends to grow as thick as the conditions of soil and moisture will permit. If for any reason it becomes too thick, nature restores the equilibrium by the destruction of the surplus. If it becomes too thin, the powers of reproduction are so great that nature again speedily restores the equilibrium by rapid multiplication. This is virtually true of all forms of animate as well as inanimate life, and man is no exception. In a state of nature the tendency is for as many men to live in any habitat as the conditions of soil and climate and the depredations of enemies will permit. Now civilization is essentially a storing of surplus energy, and is due to the fact that men have had more energy to expend than was necessary to procure subsistence. The first step in civilization, from this point of view, cannot be accounted for, unless it is explained how this accumulation took place and nature's universal law of equilibrium was defeated. It seems probable that some kind of despotism was a necessary first step. The primitive despot, the strong man, the brutal oppressor though he may have been, yet succeeded in wresting from the people by the strength of his arm or the weight of his fist a share of their subsistence. If they could not live on what was left to them, enough of them must die to restore the equilibrium. He, however, secured a surplus. Though in most cases he probably consumed his surplus in gluttony and riotous living, yet in a few cases the whim seized him to erect a monumental tomb to

his ancestors, a temple to his god, or a palace for himself. This may not have been worth doing, for it was done at the cost of despotism and oppression, and these are odious. Nevertheless something *was* done; something *was* saved from the universal process of dissipation. We may have our opinion as to which alternative we prefer. If this had not been done, the life history of that tribe would probably have continued, as it had been for ages before, to be written in these brief terms: They were born, they bred and died, generation after generation in endless succession. Human life under such conditions is not worth much; but if at the cost of despotism, oppression, and injustice something else is added to their achievements, it may have been worth while after all. This view is no defense of despotism in itself, especially under conditions in which there are other agencies for the accumulation and storing of surplus energy. Slavery, religious fear, aristocracy, — these have all doubtless been agencies for the accomplishment of the same purpose; and though they are all equally odious in themselves, they may have been means of saving the race from a worse alternative. However, when the conception of social justice had reached a point where it could distinguish between individual rights and guarantee to each individual the results of his own labor, instead of placing him at the mercy of those members of his tribe who were most gluttonous or the most rapid breeders, despotism, aristocracy, slavery, paternalism of all kinds ceased to be necessary for the accomplishment of this result, namely, the storing of surplus energy, and they therefore have no longer any justification for their existence.

The political and legal factors have been divided into two heads: (1) the problem as dealt with, How may the governor or ruler win and retain the power of ruling; (2) how far and under what conditions ought that power to be exercised. Under the first head in Machiavelli's chapters and in the admirable paraphrase by the writer who goes under the name of Henry Champernowne are discussed the arts and devices by which the ruler or the would-be ruler may obtain his power. Under the second head are discussed the questions of state interference, — the limits

to the rightful authority of the state over the individual. This distinction is not usually made, and the compiler gives as his reasons the belief that the essential differences between democracy and autocracy are not so great as are popularly imagined. It is a pure fiction that under a democracy the people rule themselves. They are governed by rulers as truly as they are in an autocracy. But there is this very important difference, — important enough, it would seem, to make even the most pessimistic highly pleased with the results of democracy, — that in a democracy the people who are governed have constitutional methods of giving or withholding their consent, whereas in an autocracy their only method of withholding consent is revolution. We in America are as truly governed by our leaders as are the inhabitants of Russia or Turkey, but we have the incalculable advantage of being able legally, through regularly constituted channels, to express our assent or dissent to the acts of our governors; whereas the citizens of the other countries named have no means except through the administration of poison or the use of the dynamite bomb. Holding this view of democracy, it seemed to the compiler that the first problem of the student of government is to find out how rulers or governors manage to secure their power. He also recognizes that in democratic countries the boss is a factor to be reckoned with as truly as the monarch is in a monarchical country. In fact, they are very much alike; they are apt to be the same kind of men, though we may thank our stars that our bosses have not become hereditary.

Throughout the work the compiler has avoided over-emphasis upon the organic concept of society. This is a concept which is so familiar that the labored attempts of writers in recent years to perfect the analogy between society and an organism seem wasted energy. The old fable of the "belly and the members" and St. Paul's argument beginning, "For as the body is one and hath many members," etc. (First Epistle to the Corinthians xii. 12–28), show clearly enough that the comparison between society and an organism has been familiar for a long time.

PART I — THE NATURE, SCOPE, AND METHOD OF SOCIOLOGY

II

CHARACTERISTICS OF THE POSITIVE METHOD IN ITS APPLICATION TO SOCIAL PHENOMENA[1]

In every science conceptions which relate to method are inseparable from those which relate to the doctrine under consideration. The method has to be so varied in its application, and so largely modified by the complexity and special nature of the phenomena, in each case, that any general notions of method would be too indefinite for actual use. If, therefore, we have not separated the method from the doctrine in the simpler department of science, much less should we think of doing so when treating of the complex phenomena of social life, to say nothing of the great feature of this last case, — its want of positivity. In the formation of a new science the general spirit of it must be seized before its particular parts can be investigated; that is, we must have some notion of the doctrine before examining the method, and then the method cannot be estimated in any other way than by its use. Thus, I have not to offer a logical exposition of method in social physics before proceeding to the science itself; but I must follow the same plan here as in the case of the anterior sciences, — ascertaining its general spirit, and what are the collective resources proper to it. Though these subjects may be said to belong to the science itself, we may consider them as belonging to the method, as they are absolutely necessary to direct our understandings in the pursuit of this difficult study.

[1] From The Positive Philosophy of Auguste Comte, translated by Harriet Martineau, Vol. II, chap. iii, London and New York, 1853.

In the higher order of sciences — in those which are the simplest and most advanced — the philosophical definition of each was almost sufficient to characterize their condition and general resources, to which no doubt could attach. But the case is otherwise with a recent and extremely complex study, the very nature of which has to be settled by laborious discussions, which are happily needless in regard to the preceding sciences. In treating of biology we found it necessary to dwell upon preparatory explanations which would have seemed puerile in any of the foregoing departments, because the chief bases of a science about which there were still so many disputes must be indisputably settled before it could take rank in the positive series. It is evident that the same process is even more needful, and must be more laborious, in the case of the science of social development, which has hitherto had no character of positivity at all, and which some of the ablest minds of our time sentence never to have any. We must not be surprised then if, after applying here the simplest and most radical ideas of positive philosophy, such as would indeed appear trivial in their formal application to the more advanced sciences, the result would appear to many, even among the enlightened, to constitute too bold an innovation, though the conditions may be no more than the barest equivalent of those which are admitted in every other case.

Infantile State of Social Science

If we look with a philosophical eye upon the present state of social science, we cannot but recognize in it the combination of all the features of that theologico-metaphysical infancy which all the other sciences have had to pass through. The present condition of political science revives before our eyes the analogy of what astrology was to astronomy, alchemy to chemistry, and the search for the universal panacea to the system of medical studies. We may, for our present purpose, consider the theological and metaphysical polities together, — the second being only a modification of the first in its relation to social science. Their attributes are the same, consisting, in regard to method, in the preponderance

of imagination over observation; and, in regard to doctrine, in the exclusive investigation of absolute ideas; the result of both of which is an inevitable tendency to exercise an arbitrary and indefinite action over phenomena which are not regarded as subject to invariable natural laws. In short, the general spirit of all speculation at that stage is at once ideal in its course, absolute in its conception, and arbitrary in its application; and these are unquestionably the prevailing characteristics of social speculation at present, regarded from any point of view whatever. If we reverse all the three aspects, we shall have precisely the spirit which must actuate the formation of positive sociology, and which must afterwards direct its continuous development. The scientific spirit is radically distinguished from the theological and metaphysical by the steady subordination of the imagination to observation; and though the positive philosophy offers the vastest and richest field to human imagination, it restricts it to discovering and perfecting the coördination of observed facts, and the means of effecting new researches; and it is this habit of subjecting scientific conceptions to the facts whose connection has to be disclosed, which it is above all things necessary to introduce into social researches; for the observations hitherto made have been vague and ill-circumscribed, so as to afford no adequate foundation for scientific reasoning; and they are usually modified themselves at the pleasure of an imagination stimulated by the most fluctuating passions. From their complexity and their closer connection with human passions, political speculations must be detained longer than any others in this deplorable philosophical condition in which they are still involved, while simpler and less stimulating sciences have successively obtained emancipation; but we must remember that all other kinds of scientific conception have gone through the same stage, from which they have issued with the more difficulty and delay exactly in proportion to their complexity and special nature. It is, indeed, only in our own day that the more complex have issued from that condition at all, as we saw to be the case with the intellectual and moral phenomena of individual life, which are still studied in a way almost as anti-scientific as political phenomena

themselves. We must not, then, consider that uncertainty and vagueness in observation are proper to political subjects. It is only that the same imperfection which has had its day throughout the whole range of speculation is here more intense and protracted; and the same theory which shows how this must be the case gives us full assurance of a philosophical regeneration in this department of science analogous to that which has taken place in the rest, though by means of severer intellectual difficulty, and the embarrassment which may arise from collision with the predominant passions of men — a liability which cannot but stimulate the endeavors of real thinkers.

The Relative superseding the Absolute

If we contemplate the positive spirit in its relation to scientific conception rather than the mode of procedure, we shall find that this philosophy is distinguished from the theologico-metaphysical by its tendency to render relative the ideas which were at first absolute. This inevitable passage from the absolute to the relative is one of the most important philosophical results of each of the intellectual revolutions which has carried on every kind of speculation from the theological or metaphysical to the scientific state. In a scientific view this contrast between the relative and the absolute may be regarded as the most decisive manifestation of the antipathy between the modern philosophy and the ancient. All investigation into the nature of beings, and their first and final causes, must always be absolute; whereas the study of the laws of phenomena must be relative, since it supposes a continuous progress of speculation subject to the gradual improvement of observation, without the precise reality being ever fully disclosed: so that the relative character of scientific conceptions is inseparable from the true idea of natural laws, just as the chimerical inclination for absolute knowledge accompanies every use of theological fictions and metaphysical entities. Now it is obvious that the absolute spirit characterizes social speculation now wherever it exists, as the different schools are all agreed in looking for an immutable political type, which makes no allowance

for the regular modification of political conceptions according to the variable state of civilization. This absolute spirit, having prevailed through all social changes, and their corresponding philosophical divergences, is now so inherent in existing political science that it affords, amidst all its enormous evils, the only means of restraining individual eccentricities, and excluding the influx of arbitrarily variable opinions. Thus, such philosophers as have desired to emancipate themselves from this absolutism, without having risen to the conception of a positive social philosophy, have justly incurred the reproach of representing political ideas as uncertain and even arbitrary in their nature, because they have deprived them of whatever character of consistency they had without substituting any other. They have even cast a sort of discredit upon all philosophical enterprise in the direction of political science, which, losing its absolutism, seemed to lose its stability, and therefore its morality. A positive sociology, however, would put to flight all these natural though empirical fears; for all antecedent experience shows that in other departments of natural philosophy scientific ideas have not become arbitrary by becoming relative, but have, on the contrary, acquired a new consistence and stability by being implicated in a system of relations which is ever extending and strengthening, and more and more restraining all serious aberration. There is, therefore, no fear of falling into a dangerous skepticism by destroying the absolute spirit, if it is done in the natural course of passing on towards the positive state. Here, as elsewhere, it is characteristic of the positive philosophy to destroy no means of intellectual coördination without substituting one more effectual and more extended; and it is evident that this transition from the absolute to the relative offers the only existing means of attaining to political conceptions that can gradually secure a unanimous and permanent assent.[1]

[1] It is in harmony with the positive spirit to begin by tracing the relation of cause and effect among the social phenomena of one's own time and place, leaving the task of finding principles of universal application, if there are any, for more advanced study, when historical investigation is brought to the aid of scientific analysis. — ED.

Presumptuous Character of the Existing Political Spirit

The importance and soundness of these conditions are less conspicuous than they might be, on account of the too close connection which, in social science more than any other, still exists between theory and practice, in consequence of which all speculative and abstract appreciation, however supremely important, excites only a feeble interest and inadequate attention. To show how this confusion results from the imperfection of social science, as the most complex of all, we must look at the existing political spirit in relation to its general application, and not for the moment in relation to the science itself. In this view we see that the existing political spirit is marked by its disposition to exercise an illimitable action over the corresponding phenomena, as it was once supposed possible to do in other departments of philosophy. Men were long in learning that man's power of modifying phenomena can result only from his knowledge of their natural laws; and in the infancy of each science they believed themselves able to exert an unbounded influence over the phenomena of that science. As this happened precisely at the period when they had the least power over phenomena, from ignorance of their laws, they rested their confidence on expectations of aid from supernatural agents, or mysterious forces supposed to be inherent in all that they saw. The delusion was protracted and the growth of true science hindered in proportion by the increasing complexity of the descending sciences, as each order of phenomena exhibited less generality than the last and obscured the perception as to what the modifying power of man really is. Social phenomena are, of course, from their extreme complexity, the last to be freed from this pretension; but it is, therefore, only the more necessary to remember that the pretension existed with regard to all the rest, in their earliest stage, and to anticipate, therefore, that social science will, in its turn, be emancipated from the delusion. It still hangs about the class of intellectual and moral phenomena; but otherwise it is now confined to social subjects. There, amidst the dawning of a sounder philosophy, we see statesmen and politicians still supposing

that social phenomena can be modified at will, the human race having, in their view, no spontaneous impulsion, but being always ready to yield to any influence of the legislator, spiritual or temporal, provided he is invested with a sufficient authority. We see the theological polity, as before, more consistent than the metaphysical, explaining the monstrous disproportion between slight causes and vast effects by regarding the legislator as merely the organ of a supernatural and absolute power; and again, we see the metaphysical school following the same course, merely substituting for Providence its unintelligible entities, and especially its grand entity, Nature, which comprehends all the rest, and is evidently only an abstract deterioration of the theological principle. Going further than the theological school in its disdain of the subjection of effects to causes, it escapes from difficulty by attributing observed events to chance, and sometimes, when that method is too obviously absurd, exaggerating ridiculously the influence of the individual mind upon the course of human affairs. The result is the same in both cases. It represents the social action of man to be indefinite and arbitrary, as was once thought in regard to biological, chemical, physical, and even astronomical phenomena, in the earlier stages of their respective sciences. It is easy to see that true political science would be unacceptable, because it must impose limits on political action, by dissipating forever the pretension of governing at will this class of phenomena, and withdrawing them from human or superhuman caprice. In close connection with the tendency to absolute conceptions, we must recognize in this delusion the chief intellectual cause of the social disturbance which now exists; for the human race finds itself delivered over, without logical protection, to the ill-regulated experimentation of the various political schools, each one of which strives to set up, for all future time, its own immutable type of government. We have seen what are the chaotic results of such a strife, and we shall find that there is no chance of order and agreement but in subjecting social phenomena, like all others, to invariable natural laws, which shall, as a whole, prescribe for each period, with entire certainty, the limits and character of political action, — in other words, introducing into the study of social phenomena the same

positive spirit which has regenerated every other branch of human speculation. Such a procedure is the true scientific basis of human dignity, as the chief tendencies of man's nature thus acquire a solemn character of authority which must be always respected by rational legislation; whereas the existing belief in the indefinite power of political combinations, which seems at first to exalt the importance of man, issues in attributing to him a sort of social automatism passively directed by some supremacy of either Providence or the human ruler. I have said enough to show that the central difficulty in the task of regenerating political science is to rectify such an error of conception, at a time when our prevailing intellectual habits render it difficult to seize social conceptions in any other than their practical aspect, and when their scientific and, yet more, their logical relations are obscured by the prepossessions of the general mind.

Prevision of Social Phenomena

The last of the preliminary considerations that we have to review is that of the scientific prevision of phenomena, which, as the test of true science, includes all the rest. We have to contemplate social phenomena as susceptible of prevision, like all other classes, within the limits of exactness compatible with their higher complexity. Comprehending the three characteristics of political science which we have been examining, prevision of social phenomena supposes, first, that we have abandoned the region of metaphysical idealities to assume the ground of observed realities by a systematic subordination of imagination to observation; secondly, that political conceptions have ceased to be absolute, and have become relative to the variable state of civilization, so that theories, following the natural course of facts, may admit of our foreseeing them; and, thirdly, that permanent political action is limited by determinate laws, since, if social events were always exposed to disturbance by the accidental intervention of the legislator, human or divine, no scientific prevision of them would be possible. Thus, we may concentrate the conditions of the spirit of positive social philosophy on this one great attribute of scientific

prevision. This concentration is all the more apt for the purpose of our inquiry, because there is no other view in which the new social philosophy is so clearly distinguished from the old. Events ordered by a supernatural will may leave room for a supposition of revelation; but the very thought of prevision in that case is sacrilegious, and the case is essentially the same when the direction of events is assigned to metaphysical entities, except that it leaves the chance of revelation, the existence of which chance shows that the metaphysical conception is a mere modification of the theological. The old conceptions may evidently be applied to explain opposite facts equally well; and they can never afford the slightest indication of those which are yet future. And, if it be objected that, at all times, a great number of secondary political facts have been considered susceptible of prevision, this only proves that the old phjlosophy has never been strictly universal, but has always been tempered by an admixture of feeble and imperfect positivism, without more or less of which society could not have held on its course. This admixture has, however, been hitherto insufficient to allow anything worthy the name of prevision, — anything more than a sort of popular forecast of some secondary and partial matters, — never rising above an uncertain and rough empiricism, which might be of some provisional use, but could not in any degree supply the need of a true political philosophy.

Having now ascertained the fundamental position of the problems of political philosophy, and thus obtained guidance as to the scientific aim to be attained, the next step is to exhibit the general spirit of social physics, whose conditions we have been deciding.

Spirit of Social Science

The philosophical principle of the science being that social phenomena are subject to natural laws, admitting of rational prevision, we have to ascertain what is the precise subject and what the peculiar character of those laws. The distinction between the statical and dynamical conditions of the subject must be extended to social science; and I shall treat of the conditions of

social existence, as in biology I treated of organization under the head of anatomy ; and then of the laws of social movement, as in biology of those of life under the head of physiology. This division, necessary for exploratory purposes, must not be stretched beyond that use ; and as we saw in biology that the distinction becomes weaker with the advance of science, so shall we see that when the science of social physics is fully constituted, this division will remain for analytical purposes, but not as a real separation of the science into two parts. The distinction is not between two classes of facts, but between two aspects of a theory. It corresponds with the double conception of order and progress; for order consists (in a positive sense) in a permanent harmony among the conditions of social existence, and progress consists in social development ; and the conditions in the one case and the laws of movement in the other constitute the statics and dynamics of social physics.[1] And here we find again the constant relation between the science and the art, — the theory and the practice. A science which proposes a positive study of the laws of order and of progress cannot be regarded with speculative rashness by practical men of any intelligence, since it offers the only rational basis for the practical means of satisfying the needs of society as to order and progress ; and the correspondence in this case will be found to be analogous to that which we have seen to exist between biological science and the arts which relate to it, — the medical art especially. One view of the deepest interest in this connection is that the ideas of order and progress which are in perpetual conflict in existing society, occasioning infinite disturbance, are thus reconciled and made necessary to each other, becoming as truly inseparable as the ideas of organization and life in the individual being. The further we go in the study of the conditions of human society, the more clearly will the organizing and progressive spirit of the positive philosophy become manifest.

[1] The present tendency among students is to question the utility of a static study of society. Sociology is coming to be a study of activities and processes, of manifestations of social energy. Therefore the distinction between statical and dynamical sociology, while logically possible, is practically of little value. — Ed.

Statical Study

The statical study of sociology consists in the investigation of laws of action and reaction of the different parts of the social system, apart, for the occasion, from the fundamental movement which is always gradually modifying them. In this view, sociological prevision, founded upon the exact general knowledge of those relations, acts by judging by each other the various statical indications of each mode of social existence in conformity with direct observation, just as is done daily in the case of anatomy. This view condemns the existing philosophical practice of contemplating social elements separately, as if they had an independent existence, and it leads us to regard them as in mutual relation and forming a whole, which compels us to treat them in combination. By this method not only are we furnished with the only possible basis for the study of social movement, but we are put in possession of an important aid to direct observation, since many social elements which cannot be investigated by immediate observation may be estimated by their scientific relation to others already known. When we have a scientific knowledge of the interior relation of the parts of any science or art, and again of the relation of the sciences to each other, and again of the relations of the arts to their respective sciences, the observation of certain portions of the scheme enables us to pronounce on the state of other portions with a true philosophical security. The case is the same when, instead of studying the collective social phenomena of a single nation, we include in the study those of contemporary nations whose reciprocal influence cannot be disputed, though it is much reduced in modern times, and, as in the instance of western Europe and eastern Asia, apparently almost effaced.

Social Organization

The only essential case in which this fundamental relation is misconceived or neglected is that which is the most important of all, involving, as it does, social organization, properly so called. The theory of social organization is still conceived of

as absolute and isolated, independent altogether of the general analysis of the corresponding civilization, of which it can, in fact, constitute only one of the principal elements. This vice is chargeable in an almost equal degree upon the most opposite political schools, which agree in abstract discussions of political systems, without thinking of the coexisting state of civilization, and usually conclude with making their immutable political type coincide with an infantile state of human development. If we ascend to the philosophical source of this error, we shall find it, I think, in the great theological dogma of the fall of man.[1] This fundamental dogma, which reappears, in one form or another, in all religions, and which is supported in its intellectual influence by the natural propensity of men to admire the past, tends, directly and necessarily, to make the continuous deterioration of society coincide with the extension of civilization. We have noticed before how, when it passes from the theological into the metaphysical state, this dogma takes the form of the celebrated hypothesis of a chimerical state of nature superior to the social state, and the more remote, the further we advance in civilization. We cannot fail to perceive the extreme seriousness, in a political as well as a philosophical sense, of an error so completely incorporated with existing doctrines, and so deeply influencing, in an unconscious way, our collective social speculations, — the more disastrously, perhaps, for not being expressly maintained as a general principle. If it were so presented it must immediately give way before sound philosophical discussion, for it is in direct contradiction to many ideas in political philosophy which, without having attained any scientific consistency, are obtaining some intellectual ascendency through the natural course of events or the expansion of the general mind. For instance, all enlightened political writers acknowledge more or less mutual relation between political institutions; and this is the first direct step towards the rational conception of the agreement of the special system of institutions with the total system of civilization

[1] This is only an attempt to explain the obvious lack of harmony between man and his environment. — Ed.

Political and Social Concurrence

We now see the best thinkers admitting a constant mutual connection between the political and the civil power: which means, in scientific language, that preponderating social forces always end in assuming the direction of society. Such partial advances towards a right view — such fortunate feeling after the right path — must not, however, induce us to relax in our requirements of a true philosophical conception of that general social agreement which can alone constitute organization. Desultory indications, more literary than scientific, can never supply the place of a strict philosophical doctrine, as we may see from the fact that, from Aristotle downwards (and even from an earlier period), the greater number of philosophers have constantly reproduced the famous aphorism of the necessary subordination of laws to manners, without this germ of sound philosophy having had any effect on the general habit of regarding institutions as independent of the coexisting state of civilization, however strange it may seem that such a contradiction should live through twenty centuries. This is, however, the natural course with intellectual principles and philosophical opinions as well as with social manners and political institutions. When once they have obtained possession of men's minds, they live on, notwithstanding their admitted impotence and inconvenience, giving occasion to more and more serious inconsistencies, till the expansion of human reason originates new principles, of equivalent generality and superior rationality. We must not, therefore, take for more than their worth the desultory attempts that we see made in the right direction, but must insist on the principle which lies at the heart of every scheme of social organization, — the necessary participation of the collective political *régime* in the universal consensus of the social body.

The scientific principle of the relation between the political and the social condition is simply this: that there must always be a spontaneous harmony between the whole and the parts of the social system, the elements of which must inevitably be sooner or later combined in a mode entirely conformable to their

nature. It is evident that not only must political institutions and social manners on the one hand, and manners and ideas on the other, be always mutually connected, but, further, that this consolidated whole must be always connected, by its nature, with the corresponding state of the integral development of humanity, considered in all its aspects, of intellectual, moral, and physical activity; and the only object of any political system whatever, temporal or spiritual, is to regulate the spontaneous expansion so as to best direct it towards its determinate end. Even during revolutionary periods, when the harmony appears furthest from being duly realized, it still exists; for without it there would be a total dissolution of the social organism. During those exceptional seasons the political *régime* is still, in the long run, in conformity with the corresponding state of civilization, as the disturbances which are manifest in the one proceed from equivalent derangements in the other. It is observable that when the popular theory attributes to the legislator the permanent power of infringing the harmony we are speaking of, it supposes him to be armed with a sufficient authority. But every social power, whether called authority or anything else, is constituted by a corresponding assent, spontaneous or deliberate, explicit or implicit, of various individual wills, resolved, from certain preparatory convictions, to concur in a common action of which this power is first the organ and then the regulator. Thus authority is derived from concurrence, and not concurrence from authority (setting aside the necessary reaction), so that no great power can arise otherwise than from the strongly prevalent disposition of the society in which it exists; and when there is no strong preponderance, such powers as exist are weak accordingly; and the more extensive the society the more irresistible is the correspondence. On the other hand, there is no denying the influence which, by a necessary reaction, the political system as a whole exercises over the general system of civilization, and which is so often exhibited in the action, fortunate or disastrous, of institutions, measures, or purely political events, even upon the course of the sciences and arts, in all ages of society, and especially the earliest. We need not dwell on this, for no one

denies it. The common error, indeed, is to exaggerate it, so as to place the reaction before the primary action. It is evident, considering their scientific relation to each other, that both concur in creating that fundamental agreement of the social organism which I propose to set forth in a brief manner as the philosophical principle of statical sociology. We shall have to advert repeatedly to the subject of the general correspondence between the political *régime* and the contemporary state of civilization, in connection with the question of the necessary limits of political action, and in the chapter which I must devote to social statics; but I did not think fit to wait for these explanations before pointing out that the political system ought always to be regarded as relative. The relative point of view, substituted for the absolute tendency of the ordinary theories, certainly constitutes the chief scientific character of the positive philosophy in its political application. If, on the one hand, the conception of this connection between government and civilization presents all ideas of political good or evil as necessarily relative and variable (which is quite another thing than being arbitrary), on the other hand it provides a rational basis for a positive theory of the spontaneous order of human society, already vaguely perceived in regard to some minor relations, by that part of the metaphysical polity which we call political economy; for if the value of any political system can consist in nothing but its harmony with the corresponding social state, it follows that in the natural course of events, and in the absence of intervention, such a harmony must necessarily be established.

Interconnection of the Social Organism

There are two principal considerations which induce me to insist on this elementary idea of the radical consensus proper to the social organism: (1) the extreme philosophical importance of this master thought of social statics, which must, from its nature, constitute the rational basis of any new political philosophy; (2) in an accessory way, that dynamical considerations of sociology must prevail throughout the rest of this

work, as being at present more interesting and therefore better understood; and it is on that account the more necessary to characterize now the general spirit of social statics, which will henceforth be treated only in an indirect and implicit way. As all artificial and voluntary order is simply a prolongation of the natural and involuntary order to which all human society tends, every rational political institution must rest upon an exact preparatory analysis of corresponding spontaneous tendencies, which alone can furnish a sufficiently solid basis. In brief, it is our business to contemplate order that we may perfect it, and not to create it, which would be impossible. In a scientific view this master thought of universal social interconnection becomes the consequence and complement of a fundamental idea established, in our view of biology, as eminently proper to the study of living bodies; not that this idea of interconnection is peculiar to that study; it is necessarily common to all phenomena, but amidst immense differences in intensity and variety, and therefore in philosophical importance. It is, in fact, true that wherever there is any system whatever, a certain interconnection must exist. The purely mechanical phenomena of astronomy offer the first suggestion of it, for the perturbations of one planet may sensibly affect another through a modified gravitation; but the relation becomes closer and more marked in proportion to the complexity and diminished generality of the phenomena, and thus it is in organic systems that we must look for the fullest mutual connection. Hitherto it had been merely an accessory idea, but then it became the basis of positive conceptions; and it becomes more marked, the more compound are the organisms and the more complex the phenomena in question, — the animal interconnection being more complete than the vegetable, and the human more than the brute, the nervous system being the chief seat of the biological interconnection. The idea must therefore be scientifically preponderant in social physics, even more than in biology, where it is so decisively recognized by the best order of students. But the existing political philosophy supposes the absence of any such interconnection among the aspects of society, and it is this which has rendered it necessary for me now to

establish the point, leaving the illustration of it to a future portion of the volume. Its consideration is, in fact, as indispensable in assigning its encyclopedic rank to social science as we before saw it to be in instituting social physics a science at all.

It follows from this attribute that there can be no scientific study of society either in its conditions or its movements, if it is separated into portions and its divisions are studied apart. I have already remarked upon this in regard to what is called political economy. Materials may be furnished by the observation of different departments; and such observation may be necessary for that object, but it cannot be called science. The methodical division of studies which takes place in the simple inorganic sciences is thoroughly irrational in the recent and complex science of society, and can produce no results. The day may come when some sort of subdivision may be practicable and desirable, but it is impossible for us now to anticipate what the principle of distribution may be; for the principle itself must arise from the development of the science, and that development can take place no otherwise than by our formation of the science as a whole. The complete body will indicate for itself, at the right season, the particular points which need investigation, and then will be the time for such special study as may be required. By any other method of proceeding we shall only find ourselves encumbered with special discussions badly instituted, worse pursued, and accomplishing no other purpose than that of impeding the formation of real science. It is no easy matter to study social phenomena in the only right way, — viewing each element in the light of the whole system. It is no easy matter to exercise such vigilance that no one of the number of contemporary aspects shall be lost sight of, but it is the right and the only way, and we may perceive in it a clear suggestion that this lofty study should be reserved for the highest order of scientific minds, better prepared than others, by wise educational discipline, for sustained speculative efforts, aided by an habitual subordination of the passions to the reason. There is no need to draw out any lengthened comparison between this state of things as it should be and that which is; and no existing

degree of social disturbance can surprise us when we consider how intellectual anarchy is at the bottom of such disturbance, and see how anarchical our intellectual condition appears in the presence of the principle I have laid down.

Order of Statical Study

Before we go on to the subject of social dynamics I will just remark that the prominent interconnection we have been considering prescribes a procedure in organic studies different from that which suits inorganic. The metaphysicians announce as an aphorism that we should always, in every kind of study, proceed from the simple to the compound; whereas it appears most rational to suppose that we should follow that or the reverse method, as may best suit our subject. There can be no absolute merit in the method enjoined, apart from its suitableness. The rule should rather be (and there probably was a time when the two rules were one) that we must proceed from the more known to the less. Now in the inorganic sciences the elements are much better known to us than the whole which they constitute; so that in that case we must proceed from the simple to the compound. But the reverse method is necessary in the study of man and of society; man and society, as a whole, being better known to us, and more accessible subjects of study, than the parts which constitute them. In exploring the universe it is as a whole that it is inaccessible to us, whereas in investigating man or society our difficulty is in penetrating the details. We have seen in our survey of biology that the general idea of animal nature is more distinct to our minds than the simpler notion of vegetable nature, and that man is the biological unity; the idea of man being at once the most compound and the starting point of speculation in regard to vital existence. Thus if we compare the two halves of natural philosophy, we shall find that in the one case it is the last degree of composition, and in the other the last degree of simplicity, that is beyond the scope of our research. As for the rest, it may obviate some danger of idle discussions to say that the positive philosophy, subordinating

all fancies to reality, excludes logical controversies about the absolute value of this or that method, apart from its scientific application. The only ground of preference being the superior adaptation of any means to the proposed end, this philosophy may, without any inconsistency, change its order of proceeding when the one first tried is found to be inferior to its converse, — a discovery of which there is no fear in regard to the question we have now been examining.

Dynamical Study

Passing on from statical to dynamical sociology, we will contemplate the philosophical conception which should govern our study of the movement of society. Part of this subject is already dispatched, because the explanations made in connection with statics have simplified the chief difficulties of the case; and social dynamics will be so prominent throughout the rest of this work that I may reduce within very small compass what I have to say now under that head.

Though the statical view of society is the basis of sociology, the dynamical view is not only the more interesting of the two but the more marked in its philosophical character, from its being more distinguished from biology by the master thought of continuous progress, or rather of the gradual development of humanity. If I were writing a methodical treatise on political philosophy, it would be necessary to offer a preliminary analysis of the individual impulsions which make up the progressive force of the human race, by referring them to that instinct which results from the concurrence of all our natural tendencies, and which urges man to develop the whole of his life, physical, moral, and intellectual, as far as his circumstances allow. But this view is admitted by all enlightened philosophers, so that I may proceed at once to consider the continuous succession of human development regarded in the whole race, as if humanity were one. For clearness we may take advantage of Condorcet's device of supposing a single nation to which we may refer all the consecutive social modifications actually witnessed among distinct

peoples. This rational fiction is nearer the reality than we are accustomed to suppose; for, in a political view, the true successors of such or such a people are certainly those who, taking up and carrying out their primitive endeavors, have prolonged their social progress, whatever may be the soil which they inhabit, or even the race from which they spring. In brief, it is political continuity which regulates sociological succession, though the having a common country must usually affect this continuity in a high degree. As a scientific artifice merely, however, I shall employ this hypothesis, and on the ground of its manifest utility.

Social Continuity

The true general spirit of social dynamics, then, consists in conceiving of each of these consecutive social states as the necessary result of the preceding and the indispensable mover of the following, according to the axiom of Leibnitz, — *the present is big with the future.* In this view the object of science is to discover the laws which govern this continuity, and the aggregate of which determines the course of human development. In short, social dynamics studies the laws of succession, while social statics inquires into those of coexistence; so that the use of the first is to furnish the true theory of progress to political practice, while the second performs the same service in regard to order; and this suitability to the needs of modern society is a strong confirmation of the philosophical character of such a combination.

Produced by Natural Laws

If the existence of sociological laws has been established in the more difficult and uncertain case of the statical condition, we may assume that they will not be questioned in the dynamical province. In all times and places the ordinary course of even our brief individual life has disclosed certain remarkable modifications which have occurred in various ways in the social state; and all the most ancient representations of human life bear unconscious and most interesting testimony to this, apart from

all systematic estimate of the fact. Now it is the slow, continuous accumulation of these successive changes which gradually constitutes the social movement whose steps are ordinarily marked by generations, as the most appreciable elementary variations are wrought by the constant renewal of adults. At a time when the average rapidity of this progression seems to all eyes to be remarkably accelerated, the reality of the movement cannot be disputed, even by those who most abhor it. The only question is about the constant subjection of these great dynamical phenomena to invariable natural laws, — a proposition about which there is no question to any one who takes his stand on positive philosophy. It is easy, however, to establish from any point of view that the successive modifications of society have always taken place in a determinate order, the rational explanation of which is already possible in so many cases that we may confidently hope to recognize it ultimately in all the rest. So remarkable is the steadiness of this order, moreover, that it exhibits an exact parallelism of development among distinct and independent populations, as we shall see when we come to the historical portion of this volume. Since, then, the existence of the social movement is unquestionable, on the one hand, and, on the other, the succession of social states is never arbitrary, we cannot but regard this continuous phenomenon as subject to natural laws as positive as those which govern all other phenomena, though more complex. There is, in fact, no intellectual alternative, and thus it is evident that it is on the ground of social science that the great conflict must soon terminate which has gone on for three centuries between the positive and the theologico-metaphysical spirit. Banished forever from all other classes of speculation, in principle at least, the old philosophies now prevail in social science alone; and it is from this domain that they have to be excluded, by the conception of the social movement being subject to invariable natural laws instead of to any will whatever.

Though the fundamental laws of social interconnection are especially verified in this condition of movement, and though there is a necessary unity in this phenomenon, it may be usefully

applied, for preparatory purposes, to the separate elementary aspects of human existence, — physical, moral, intellectual, and finally political, — their mutual relation being kept in view. Now in whichever of these ways we regard, as a whole, the movement of humanity from the earliest periods till now, we shall find that the various steps are connected in a determinate order, as we shall hereafter see when we investigate the laws of this succession. I need refer here only to the intellectual evolution, which is the most distinct and unquestionable of all, as it has been the least impeded and most advanced of any, and has therefore been usually taken for guidance. The chief part of this evolution, and that which has most influenced the general progression, is no doubt the development of the scientific spirit, from the primitive labors of such philosophers as Thales and Pythagoras to those of men like Lagrange and Bichat. Now no enlightened man can doubt that in this long succession of efforts and discoveries the human mind has pursued a determinate course, the exact preparatory knowledge of which might have allowed a cultivated reason to foresee the progress proper to each period. Though the historical considerations cited in my former volume were only incidental, any one may recognize in them numerous and indisputable examples of this necessary succession, more complex perhaps, but not more arbitrary, than any natural law, whether in regard to the development of each separate science or to the mutual influence of the different branches of natural philosophy. In accordance with the principles laid down at the beginning of this work, we have already seen in various signal instances that the chief progress of each period, and even of each generation, was a necessary result of the immediately preceding state; so that the men of genius, to whom such progression has been too exclusively attributed, are essentially only the proper organs of a predetermined movement, which would in their absence have found other issues. We find a verification of this in history, which shows that various eminent men were ready to make the same great discovery at the same time, while the discovery required only one organ. All the parts of the human evolution admit of analogous observations,

as we shall presently see, though they are more complex and less obvious than that which I have just cited. The natural progression of the arts of life is abundantly evident; and in our direct study of social dynamics we shall find an explanation of the apparent exception of the fine arts, which will be found to oppose no contradiction to the general course of human progression. As to that part of the movement which appears at present to be least reducible to natural laws, — the political movement (still supposed to be governed by wills of adequate power), — it is as clear as in any other case that political systems have exhibited an historical succession, according to a traceable filiation, in a determinate order, which I am prepared to show to be even more inevitable than that of the different states of human intelligence.

The interconnection which we have examined and established in a statical view may aid us in developing the conception of the existence of positive laws in social dynamics. Unless the movement was determined by those laws it would occasion the entire destruction of the social system. Now, that interconnection simplifies and strengthens the preparatory indications of dynamic order; for when it has once been shown in any relation we are authorized to extend it to all others, and this unites all the partial proofs that we can successively obtain of the reality of this scientific conception. In the choice and the application of these verifications we must remember that the laws of social dynamics are most recognizable when they relate to the largest societies, in which secondary disturbances have the smallest effect. Again, these fundamental laws become the more irresistible, and therefore the more appreciable, in proportion to the advancement of the civilization upon which they operate, because the social movement becomes more distinct and certain with every conquest over accidental influences. As for the philosophical coördination of these preparatory evidences, the combination of which is important to science, it is clear that the social evolution must be more inevitably subject to natural laws, the more compound are the phenomena, and the less perceptible, therefore, the irregularities which arise from individual influences. This shows how

inconsistent it is, for instance, to suppose the scientific movement to be subject to positive laws, while the political movement is regarded as arbitrary; for the latter, being more composite, must overrule individual disturbances, and be therefore more evidently predetermined than the former, in which individual genius must have more power. Any paradoxical appearance which this statement may exhibit will disappear in the course of further examination.

If I confined myself strictly to a scientific view, I might satisfy myself with proving the fact of social progression, without taking any notice of the question of human perfectibility; but so much time and effort are wasted in groundless speculation on that interesting question, argued as it is on the supposition that political events are arbitrarily determined, that it may be as well to notice it in passing, — and the more because it may serve as a natural transition to the estimate of the limits of political action.

Notion of Human Perfectibility

We have nothing to do here with the metaphysical controversy about the absolute happiness of man at different stages of civilization. As the happiness of every man depends on the harmony between the development of his various faculties and the entire system of the circumstances which govern his life, and as, on the other hand, this equilibrium always establishes itself spontaneously to a certain extent, it is impossible to compare in a positive way, either by sentiment or reasoning, the individual welfare which belongs to social situations that can never be brought into direct comparison; and therefore the question of the happiness of different animal organisms, or of their two sexes, is merely impracticable and unintelligible. The only question, therefore, is of the effect of the social evolution, which is so undeniable that there is no reasoning with any one who does not admit it as the basis of the inquiry. The only ground of discussion is whether development and improvement, — the theoretical and the practical aspect, — are one; whether the development is necessarily accompanied by a corresponding

amelioration, or progress, properly so called. To me it appears that the amelioration is as unquestionable as the development from which it proceeds, provided we regard it as subject, like the development itself, to limits, general and special, which science will be found to prescribe. The chimerical notion of unlimited perfectibility is thus at once excluded. Taking the human race as a whole, and not any one people, it appears that human development brings after it, in two ways, an ever-growing amelioration, first in the radical condition of man, which no one disputes, and next in his corresponding faculties, which is a view much less attended to. There is no need to dwell upon the improvement in the conditions of human existence, both by the increasing action of man on his environment through the advancement of the sciences and arts, and by the constant amelioration of his customs and manners, and again by the gradual improvement in social organization. We shall presently see that in the Middle Ages, which are charged with political retrogression, the progress was more political than any other. One fact is enough to silence sophistical declamation on this subject, — the continuous increase of population all over the globe, as a consequence of civilization, while the wants of individuals are, as a whole, better satisfied at the same time. The tendency to improvement must be highly spontaneous and irresistible to have persevered notwithstanding the enormous faults, — political faults especially, — which have at all times absorbed or neutralized the greater part of our social forces. Even throughout the revolutionary period, in spite of the marked discordance between the political system and the general state of civilization, the improvement has proceeded not only in physical and intellectual but also in moral respects, though the transient disorganization could not but disturb the natural evolution. As for the other aspect of the question, — the gradual and slow improvement of human nature within narrow limits, — it seems to me impossible to reject altogether the principle proposed (with great exaggeration, however) by Lamarck, of the necessary influence of a homogeneous and continuous exercise in producing, in every animal organism and especially in man, an organic improvement

susceptible of being established in the race, after a sufficient persistence. If we take the best marked case, — that of intellectual development, — it seems to be unquestionable that there is a superior aptitude for mental combinations, independent of all culture, among highly civilized people; or, what comes to the same thing, an inferior aptitude among nations that are less advanced, — the average intellect of the members of those societies being taken for observation. The intellectual faculties are, it is true, more modified than the others by the social evolution; but then they have the smallest relative effect in the individual human constitution, so that we are authorized to infer from their amelioration a proportionate improvement in aptitudes that are more marked and equally exercised. In regard to morals particularly, I think it indisputable that the gradual development of humanity favors a growing preponderance of the noblest tendencies of our nature, as I hope to prove further on. The lower instincts continue to manifest themselves in modified action, but their less sustained and more repressed exercise must tend to debilitate them by degrees, and their increasing regulation certainly brings them into involuntary concurrence in the maintenance of a good social economy, and especially in the case of the least marked organisms, which constitute a vast majority. These two aspects of social evolution, then, — the *development* which brings after it the *improvement*, — we may consider to be admitted as facts.

Adhering to our relative in opposition to the absolute view, we must conclude the social state, regarded as a whole, to have been as perfect in each period as the coexisting condition of humanity and of its environment would allow. Without this view, history would be incomprehensible; and the relative view is as indispensable in regard to progress as, in considering social statics, we saw it to be in regard to order. If, in a statical view, the various social elements cannot but maintain a spontaneous harmony, which is the first principle of order, neither can any of them help being as advanced at any period as the whole system of influences permits. In either case the harmony and the movement are the result of invariable natural laws which

produce all phenomena whatever, and are more obscure in social science merely on account of the greater complexity of the phenomena concerned.

Limits of Political Action

And now occurs, as the last aspect of social dynamics, the question of the general limits of political action. No enlightened man can be blind to the necessary existence of such limits, which can be ignored only on the old theological supposition of the legislator being merely the organ of a direct and continuous providence, which admits of no limits. We need not stop to confute that hypothesis, which has no existence but in virtue of ancient habits of thought. In any case human action is very limited in spite of all aids from concurrence and ingenious methods; and it is difficult to perceive why social action should be exempt from this restriction, which is an inevitable consequence of the existence of natural laws. Through all the self-assertions of human pride every statesman of experience knows well the reality of the bounds prescribed to political action by the aggregate of social influences, to which he must attribute the failure of the greater number of the projects which he had secretly cherished; and perhaps the conviction is most thorough, while most carefully hidden, in the mind of the most powerful of statesmen, because his inability to struggle against natural laws must be decisive in proportion to his implication with them. Seeing that social science would be impossible in the absence of this principle, we need not dwell further upon it, but may proceed to ascertain the fitness of the new political philosophy to determine, with all the precision that the subject admits, what is the nature of these limits, general or special, permanent or temporary.

Two questions are concerned here: first, in what way the course of human development may be affected by the aggregate of causes of variation which may be applied to it; and next, what share the voluntary and calculated action of our political combinations may have among these modifying influences. The

first question is by far the most important, both because it is a general principle, which the second is not, and because it is fully accessible, which again the second is not.

Social Phenomena Modifiable

We must observe, in the first place, that social phenomena may, from their complexity, be more easily modified than any others, according to the law which was established to that effect in my first volume. Thus, the limits of variation are wider in regard to sociological than to any other laws. If, then, human intervention holds the same proportionate rank among modifying influences as it is natural at first to suppose, its influence must be more considerable in the first case than in any other, all appearances to the contrary notwithstanding. This is the first scientific foundation of all rational hopes of a systematic reformation of humanity; and on this ground illusions of this sort certainly appear more excusable than on any other subject. But though modifications from all causes are greater in the case of political than of simpler phenomena, still they can never be more than modifications; that is, they will always be in subjection to those fundamental laws, whether statical or dynamical, which regulate the harmony of the social elements and the filiation of their successive variations. There is no disturbing influence, exterior or human, which can make incompatible elements coexist in the political system, or change in any way the natural laws of the development of humanity. The inevitable gradual preponderance of continuous influences, however imperceptible their power may be at first, is now admitted with regard to all natural phenomena; and it must be applied to social phenomena whenever the same method of philosophizing is extended to them. What, then, are the modifications of which the social organism and the social life are susceptible, if nothing can alter the laws either of harmony or of succession? The answer is that modifications act upon the intensity and secondary operation of phenomena, but without affecting their nature or filiation. To suppose that they could, would be to exalt the disturbing above

the fundamental cause, and would destroy the whole economy of laws. In the political system this principle of positive philosophy shows that, in a statical view, any possible variations can affect only the intensity of the different tendencies belonging to each social situation, without in any way hindering or producing, or, in a word, changing the nature of those tendencies; and in the same way, in a dynamical view, the progress of the race must be considered susceptible of modification only with regard to its speed, and without any reversal in the order of development, or any interval of any importance being overleaped. These variations are analogous to those in the animal organism, with the one difference that in sociology they are more complex; and, as we saw that the limits of variation remain to be established in biology, it is not to be expected that sociology should be more advanced. But all we want here is to obtain a notion of the general spirit of the law in regard both to social statics and dynamics; and looking at it from both points of view, it seems to me impossible to question its truth. In the intellectual order of phenomena, for instance, there is no accidental influence nor any individual superiority which can transfer to one period the discoveries reserved for a subsequent age, in the natural course of the human mind; nor can there be the reverse case of postponement. The history of the sciences settles the question of the close dependence of even the most eminent individual genius on the contemporary state of the human mind; and this is above all remarkable in regard to the improvement of methods of investigation, either in the way of reasoning or experiment. The same thing happens in regard to the arts; and especially in whatever depends on mechanical means in substitution for human action. And there is not, in reality, any more room for doubt in the case of moral development, the character of which is certainly determined in each period by the corresponding state of the social evolution, whatever may be the modifications caused by education or individual organization. Each of the leading modes of social existence determines for itself a certain system of morals and manners, the common aspect of which is easily recognized in all individuals, in the midst of their characteristic differences; for instance, there

is a state of human life in which the best individual natures contract a habit of ferocity, from which very inferior natures easily emancipate themselves in a better state of society. The case is the same in a political view, as our historical analysis will hereafter show. And in fact, if we were to review all the facts and reflections which establish the existence of the limits of variation, whose principle I have just laid down, we should find ourselves reproducing in succession all the proofs of the subjection of social phenomena to invariable laws; because the principle is neither more nor less than a strict application of the philosophical conception.

Order of Modifying Influences

We cannot enlarge upon the second head, — that is, the classification of modifying influences according to their respective importance. If such a classification is not yet established in biology, it would be premature indeed to attempt it in social science. Thus, if the three chief causes of social variation appear to me to result first, from race; secondly, from climate; thirdly, from political action in its whole scientific extent, it would answer none of our present purposes to inquire here whether this or some other is the real order of their importance. The political influences are the only ones really open to our intervention; and to that head general attention must be directed, though with great care to avoid the conclusion that that class of influences must be the most important because it is the most immediately interesting to us. It is owing to such an illusion as this that observers who believe themselves emancipated from old prejudices cannot obtain sociological knowledge, because they enormously exaggerate the power of political action. Because political operations, temporal or spiritual, can have no social efficacy but in as far as they are in accordance with the corresponding tendencies of the human mind, they are supposed to have produced what is in reality occasioned by a spontaneous evolution, which is less conspicuous and easily overlooked. Such a mistake proceeds in neglect of numerous and marked cases in history, in which the most

prodigious political authority has left no lasting traces of its well-sustained development, because it moved in a contrary direction to modern civilization,—as in the instances of Julian, of Philip II, of Napoleon Bonaparte, etc. The inverse cases, unhappily too few, are still more decisive,—those cases in which political action, sustained by an equally powerful authority, has nevertheless failed in the pursuit of ameliorations that were premature, though in accordance with the social movement of the time. Intellectual history, as well as political, furnishes examples of this kind in abundance. It has been sensibly remarked by Fergusson that even the action of one nation upon another, whether by conquest or otherwise, though the most intense of all social forces, can effect merely such modifications as are in accordance with its existing tendencies; so that, in fact, the action merely accelerates or extends a development which would have taken place without it. In politics, as in science, *opportuneness* is always the main condition of all great and durable influence, whatever may be the personal value of the superior man to whom the multitude attribute social action of which he is merely the fortunate organ. The power of the individual over the race is subject to these general limits, even when the effects, for good or for evil, are as easy as possible to produce. In revolutionary times, for instance, those who are proud of having aroused anarchical passions in their contemporaries do not see that their miserable triumph is due to a spontaneous disposition, determined by the aggregate of the corresponding social state, which has produced a provisional and partial relaxation of the general harmony. As for the rest, it being ascertained that there are limits of variation among social phenomena, and modifications dependent on systematic political action, and as the scientific principle which is to describe such modifications is now known, the influence and scope of that principle must be determined in each case by the direct development of social science applied to the appreciation of the corresponding state of circumstances. It is by such estimates, empirically attempted, that men of genius have been guided in all great and profound action upon humanity in any way whatever; and it is only thus that they have been able to rectify in a rough

way the illusory suggestions of the irrational doctrines in which they were educated. Everywhere, as I have so often said, foresight is the true source of action.

The inaccurate intellectual habits which as yet prevail in political philosophy may induce an apprehension that, according to such considerations as those just presented, the new science of social physics may reduce us to mere observation of human events, excluding all continuous intervention. It is, however, certain that, while dissipating all ambitious illusions about the indefinite action of man on civilization, the principle of rational limits to political action establishes, in the most exact and unquestionable manner, the true point of contact between social theory and practice. It is by this principle only that political art can assume a systematic character, by its release from arbitrary principles mingled with empirical notions. It is thus only that political art can pass upwards as medical art has done, the two cases being strongly analogous. As political intervention can have no efficacy unless it rests on corresponding tendencies of the political organism or life, so as to aid its spontaneous development, it is absolutely necessary to understand the natural laws of harmony and succession which determine, in every period and under every social aspect, what the human evolution is prepared to produce, pointing out at the same time the chief obstacles which may be got rid of. It would be exaggerating the scope of such an art to suppose it capable of obviating in all cases the violent disturbances which are occasioned by impediments to the natural evolution. In the highly complex social organism maladies and crises are necessarily even more inevitable than in the individual organism. But though science is powerless for the moment amidst wild disorder and extravagance, it may palliate and abridge the crises by understanding their character and foreseeing their issue, and by more or less intervention, where any is possible. Here, as in other cases, and more than in other cases, the office of science is not to govern but to modify phenomena,—and to do this it is necessary to understand their laws.

Thus, then, we see what is the function of social science. Without extolling or condemning political facts, science regards

them as subjects of observation; it contemplates each phenomenon in its harmony with coexisting phenomena and in its connection with the foregoing and the following state of human development; it endeavors to discover, from both points of view, the general relations which connect all social phenomena; and each of them is *explained*, in the scientific sense of the word, when it has been connected with the whole of the existing situation and the whole of the preceding movement. Favoring the social sentiment in the highest degree, this science fulfills the famous suggestion of Pascal by representing the whole human race, past, present, and future, as constituting a vast and eternal social unit whose different organs, individual and national, concur, in their various modes and degrees, in the evolution of humanity. Leading us on, like every other science, with as much exactness as the extreme complexity of its phenomena allows, to a systematic prevision of the events which must result from either a given situation or a given aggregate of antecedents, political science enlightens political art not only in regard to the tendencies which should be aided but also as to the chief means that should be employed, so as to avoid all useless or ephemeral and therefore dangerous action; in short, all waste of any kind of social force.

Means of Investigation

This examination of the general spirit of political philosophy has been much more difficult than the same process in regard to any established science. The next step, now that this is accomplished, is to examine, according to my usual method, the means of investigation proper to social science. In virtue of a law before recognized, we may expect to find in sociology a more varied and developed system of resources than in any other science, in proportion to the complexity of the phenomena, while yet this extension of means does not compensate for the increased imperfection arising from the intricacy. The extension of the means is also more difficult to verify than in any prior case, from the novelty of the subject; and I can scarcely hope that such a sketch as I must present here will command such confidence as

will arise when a complete survey of the science shall have confirmed what I now offer.

As social physics assumes a place in the hierarchy of sciences after all the rest, and therefore dependent on them, its means of investigation must be of two kinds, — those which are peculiar to itself, and which may be called direct, and those which arise from the connection of sociology with the other sciences; and these last, though indirect, are as indispensable as the first. I shall review, first, the direct resources of the science.

Here, as in all other cases, there are three methods of proceeding, — by observation, experiment, and comparison.

Observation

Very imperfect and even vicious notions prevail at present as to what observation can be and can effect in social science. The chaotic state of doctrine of the last century has extended to method, and amidst our intellectual disorganization difficulties have been magnified; precautionary methods, experimental and rational, have been broken up; and even the possibility of obtaining social knowledge by observation has been dogmatically denied; but if the sophisms put forth on this subject were true, they would destroy the certainty not only of social science but of all the simpler and more perfect sciences that have gone before. The ground of doubt assigned is the uncertainty of human testimony; but all the sciences, up to the most simple, require proofs of testimony, — that is, in the elaboration of the most positive theories we have to admit observations which could not be directly made, nor even repeated, by those who use them, and the reality of which rests on the only faithful testimony of the original investigators, there being nothing in this to prevent the use of such proofs in concurrence with immediate observations. In astronomy such a method is obviously necessary; it is equally though less obviously necessary even in mathematics, and, of course, much more evidently so in the case of the more complex sciences. How could any science emerge from the nascent state, — how could there be any organization of intellectual labor,

even if research were restricted to the utmost, if every one rejected all observations but his own? The stoutest advocates of historical skepticism do not go so far as to advocate this. It is only in the case of social phenomena that the paradox is proposed; and it is made use of there because it is one of the weapons of the philosophical arsenal which the revolutionary metaphysical doctrine constructed for the intellectual overthrow of the ancient political system. The next great hindrance to the use of observation is the empiricism which is introduced into it by those who, in the name of impartiality, would interdict the use of any theory whatever. No logical dogma could be more thoroughly irreconcilable with the spirit of positive philosophy, or with its special character in regard to the study of social phenomena, than this. No real observation of any kind of phenomena is possible, except in as far as it is first directed and finally interpreted by some theory; and it was this logical need which, in the infancy of human reason, occasioned the rise of theological philosophy, as we shall see in the course of our historical survey. The positive philosophy does not dissolve this obligation, but, on the contrary, extends and fulfills it more and more the further the relations of phenomena are multiplied and perfected by it. Hence it is clear that, scientifically speaking, all isolated, empirical observation is idle, and even radically uncertain; that science can use only those observations which are connected, at least hypothetically with some law; that it is such a connection which makes the chief difference between scientific and popular observation, embracing the same facts but contemplating them from different points of view; and that observations empirically conducted can at most supply provisional materials, which must usually undergo an ulterior revision. The rational method of observation becomes more necessary in proportion to the complexity of the phenomena, amidst which the observer would not know what he ought to look at in the facts before his eyes, but for the guidance of a preparatory theory; and thus it is that by the connection of foregoing facts we learn to see the facts that follow. This is undisputed with regard to astronomical, physical, and chemical research, and in every branch of biological study in which good

observation of its highly complex phenomena is still very rare, precisely because its positive theories are very imperfect. Carrying on the analogy, it is evident that in the corresponding divisions, statical and dynamical, of social science there is more need than anywhere else of theories which shall scientifically connect the facts that are happening with those that have happened; and the more we reflect, the more distinctly we shall see that in proportion as known facts are mutually connected we shall be better able not only to estimate but to perceive those which are yet unexplored. I am not blind to the vast difficulty which this requisition imposes on the institution of positive sociology, — obliging us to create at once, so to speak, observations and laws, placing us, on account of their indispensable connection, in a sort of vicious circle from which we can issue only by employing in the first instance materials which are badly elaborated and doctrines which are ill-conceived. How I may succeed in a task so difficult and delicate we shall see at its close; but, however that may be, it is clear that it is the absence of any positive theory which at present renders social observations so vague and incoherent. There can never be any lack of facts; for in this case, even more than in others, it is the commonest sort of facts that are most important, whatever the collectors of secret anecdotes may think; but, though we are steeped to the lips in them, we can make no use of them, nor even be aware of them, for want of speculative guidance in examining them. The statical observation of a crowd of phenomena cannot take place without some notion, however elementary, of the laws of social interconnection; and dynamical facts could have no fixed direction if they were not attached, at least by a provisional hypothesis, to the laws of social development. The positive philosophy is very far from discouraging historical or any other erudition; but the precious night watchings, now so lost in the laborious acquisition of a conscientious but barren learning, may be made available by it for the constitution of true social science and the increased honor of the earnest minds that are devoted to it. The new philosophy will supply fresh and nobler subjects, unhoped-for insight, a loftier aim, and therefore a higher scientific dignity.

It will discard none but aimless labors, without principle and without character, as in physics there is no room for compilations of empirical observations; and at the same time philosophy will render justice to the zeal of students of a past generation, who, destitute of the favorable guidance which we of this day enjoy, followed up their laborious historical researches with an instinctive perseverance, and in spite of the superficial disdain of the philosophers of the time. No doubt the same danger attends research here as elsewhere, — the danger that, from the continuous use of scientific theories, the observer may sometimes pervert facts by erroneously supposing them to verify some ill-grounded speculative prejudices of his own. But we have the same guard here as elsewhere, — in the further extension of the science; and the case would not be improved by a recurrence to empirical methods, which would be merely leaving theories that may be misapplied, but can always be rectified, for imaginary notions which cannot be substantiated at all. Our feeble reason may often fail in the application of positive theories, but at least these transfer us from the domain of imagination to that of reality, and expose us infinitely less than any other kind of doctrine to the danger of seeing in facts that which is not.

It is now clear that social science requires, more than any other, the subordination of observation to the statical and dynamical laws of phenomena. No social fact can have any scientific meaning till it is connected with some other social fact, without which connection it remains a mere anecdote, involving no rational utility. This condition so far increases the immediate difficulty that good observers will be rare at first, though more abundant than ever as the science expands; and here we meet with another confirmation of what I said at the outset of this volume, — that the formation of social theories should be confided only to the best organized minds, prepared by the most rational training. Explored by such minds, according to rational views of coexistence and succession, social phenomena no doubt admit of much more varied and extensive means of investigation than phenomena of less complexity. In this view it is not only the immediate inspection or direct description of events that

affords useful means of positive exploration, but the consideration of apparently insignificant customs, the appreciation of various kinds of monuments, the analysis and comparison of languages, and a multitude of other resources. In short, a mind suitably trained becomes able by exercise to convert almost all impressions from the events of life into sociological indications, when once the connection of all indications with the leading ideas of the science is understood. This is a facility afforded by the mutual relation of the various aspects of society, which may partly compensate for the difficulty caused by that mutual connection; if it renders observation more difficult, it affords more means for its prosecution.

Experiment

It might be supposed beforehand that the second method of investigation, experiment, must be wholly inapplicable to social science; but we shall find that the science is not entirely deprived of this resource, though it must be one of inferior value. We must remember (what was before explained) that there are two kinds of experimentation, — the direct and the indirect, — and that it is not necessary to the philosophical character of this method that the circumstances of the phenomenon in question should be, as is vulgarly supposed in the learned world, artificially instituted. Whether the case be natural or factitious, experimentation takes place whenever the regular course of the phenomenon is interfered with in any determinate manner. The spontaneous nature of the alteration has no effect on the scientific value of the case, if the elements are known. It is in this sense that experimentation is possible in sociology. If direct experimentation has become too difficult amidst the complexities of biology, it may well be considered impossible in social science. Any artificial disturbance of any social element must affect all the rest, according to the laws both of coexistence and succession; and the experiment would therefore, if it could be instituted at all, be deprived of all scientific value, through the impossibility of isolating either the conditions or the results of the phenomenon. But we saw in our survey of biology that pathological cases are the true scientific

equivalent of pure experimentation, and why. The same reasons apply, with even more force, to sociological researches. In them pathological analysis consists in the examination of cases, unhappily too common, in which the natural laws, either of harmony or of succession, are disturbed by any causes, special or general, accidental or transient, as in revolutionary times especially, and above all, in our own. These disturbances are, in the social body, exactly analogous to diseases in the individual organism; and I have no doubt whatever that the analogy will be more evident (allowance being made for the unequal complexity of the organisms) the deeper the investigation goes. In both cases it is, as I said once before, a noble use to make of our reason, to disclose the real laws of our nature, individual or social, by the analysis of its sufferings. But if the method is imperfectly instituted in regard to biological questions, much more faulty must it be in regard to the phenomena of social science, for want even of the rational conceptions to which they are to be referred. We see the most disastrous political experiments forever renewed, with only some insignificant and irrational modifications, though their first operation should have fully satisfied us of the uselessness and danger of the expedients proposed. Without forgetting how much is ascribable to the influence of human passions, we must remember that the deficiency of an authoritative rational analysis is one of the main causes of the barrenness imputed to social experiments, the course of which would become much more instructive if it were better observed. The great natural laws exist and act in all conditions of the organism; for, as we saw in the case of biology, it is an error to suppose that they are violated or suspended in the case of disease; and we are therefore justified in drawing our conclusions, with due caution, from the scientific analysis of disturbance to the positive theory of normal existence. This is the nature and character of the indirect experimentation which discloses the real economy of the social body in a more marked manner than simple observation could do. It is applicable to all orders of sociological research, whether relating to existence or to movement, and regarded under any aspect whatever, — physical, intellectual, moral, or political; and to all degrees

of the social evolution, from which, unhappily, disturbances have never been absent. As for its present extension, no one can venture to offer any statement of it, because it has never been duly applied in any investigation in political philosophy; and it can become customary only by the institution of the new science which I am endeavoring to establish; but I could not omit this notice of it as one of the means of investigation proper to social science.

Comparison

As for the third of those methods, comparison, the reader must bear in mind the explanations offered, in our survey of biological philosophy, of the reasons why the comparative method must prevail in all studies of which the living organism is the subject; and the more remarkably, in proportion to the rank of the organism. The same considerations apply in the present case, in a more conspicuous degree; and I may leave it to the reader to make the application, merely pointing out the chief differences which distinguish the use of the comparative method in sociological inquiries.

Comparison with Inferior Animals

It is a very irrational disdain which makes us object to all comparison between human society and the social state of the lower animals. This unphilosophical pride arose out of the protracted influence of the theologico-metaphysical philosophy; and it will be corrected by the positive philosophy, when we better understand and can estimate the social state of the higher orders of mammifers, for instance. We have seen how important is the study of individual life in regard to intellectual and moral phenomena, of which social phenomena are the natural result and complement. There was once the same blindness to the importance of the procedure in this case as now exists in the other; and, as it has given way in the one case, so it will in the other. The chief defect in the kind of sociological comparison that we want is that it is limited to statical considerations; whereas the dynamical are, at the present time, the preponderant and direct

subject of science. The restriction results from the social state of animals being, though not so stationary as we are apt to suppose, yet susceptible only of extremely small variations, in no way comparable to the continued progression of humanity in its feeblest days. But there is no doubt of the scientific utility of such a comparison, in the statical province, where it characterizes the elementary laws of social interconnection by exhibiting their action in the most imperfect state of society, so as even to suggest useful inductions in regard to human society. There cannot be a stronger evidence of the natural character of the chief social relations, which some people fancy that they can transform at pleasure. Such sophists will cease to regard the great ties of the human family as factitious and arbitrary when they find them existing, with the same essential characteristics, among the animals, and more conspicuously the nearer the organisms approach to the human type. In brief, in all that part of sociology which is almost one with intellectual and moral biology, or with the natural history of man, in all that relates to the first germs of the social relations and the first institutions which were founded by the unity of the family or the tribe, there is not only great scientific advantage but real philosophical necessity for employing the rational comparison of human with other animal societies. Perhaps it might even be desirable not to confine the comparison to societies which present a character of voluntary coöperation in analogy to the human. They must always rank first in importance ; but the scientific spirit, extending the process to its final logical term, might find some advantage in examining those strange associations proper to the inferior animals, in which an involuntary coöperation results from an indissoluble organic union, either by simple adhesion or real continuity. If the science gained nothing by this extension, the method would. And there is nothing that can compare with such an habitual scientific comparison for the great service of casting out the absolute spirit which is the chief vice of political philosophy. It appears to me, moreover, that, in a practical view, the insolent pride which induces some ranks of society to suppose themselves as, in a manner, of another species than the rest

of mankind is in close affinity with the irrational disdain that repudiates all comparison between human and other animal nature. However all this may be, these considerations apply only to a methodical and special treatment of social philosophy. Here, where I can offer only the first conception of the science, in which dynamical considerations must prevail, it is evident that I can make little use of the kind of comparison; and this makes it all the more necessary to point it out, lest its omission should occasion such scientific inconveniences as I have just indicated. The commonest logical procedures are generally so characterized by their very application that nothing more of a preliminary nature is needed than the simplest examination of their fundamental properties.

Comparison of Coexisting States of Society

To indicate the order of importance of the forms of society which are to be studied by the comparative method, I begin with the chief method, which consists in a comparison of the different coexisting states of human society on the various parts of the earth's surface, — those states being completely independent of each other. By this method the different stages of evolution may all be observed at once. Though the progression is single and uniform in regard to the whole race, some very considerable and very various populations have, from causes which are little understood, attained extremely unequal degrees of development, so that the former states of the most civilized nations are now to be seen, amidst some partial differences, among contemporary populations inhabiting different parts of the globe. In its relation to observation this kind of comparison offers the advantage of being applicable both to statical and dynamical inquiries, verifying the laws of both, and even furnishing occasionally valuable direct inductions in regard to both. In the second place, it exhibits all possible degrees of social evolution to our immediate observation. From the wretched inhabitants of Tierra del Fuego to the most advanced nations of western Europe, there is no social grade which is not extant in some points of the globe, and usually in localities which are

clearly apart. In the historical part of this volume we shall find that some interesting secondary phases of social development, of which the history of civilization leaves no perceptible traces, can be known only by this comparative method of study; and these are not, as might be supposed, the lowest degrees of evolution, which every one admits can be investigated in no other way. And between the great historical aspects there are numerous intermediate states which must be observed thus, if at all. This second part of the comparative method verifies the indications afforded by historical analysis, and fills up the gaps it leaves; and nothing can be more rational than this method, as it rests upon the established principle that the development of the human mind is uniform in the midst of all diversities of climate, and even of race, such diversities having no effect upon anything more than the rate of progress. But we must beware of the scientific dangers attending the process of comparison by this method. For instance, it can give us no idea of the order of succession, as it presents all the states of development as coexisting; so that, if the order of development were not established by other methods, this one would infallibly mislead us. And again, if we were not misled as to the order, there is nothing in this method which discloses the filiation of the different systems of society,—a matter in which the most distinguished philosphers have been mistaken in various ways and degrees. Again, there is the danger of mistaking modifications for primary phases, as when social differences have been ascribed to the political influence of climate, instead of to that inequality of evolution which is the real cause. Sometimes, but more rarely, the mistake is the other way. Indeed, there is nothing in the matter that can show which of two cases presents the diversity that is observed. We are in danger of the same mistake in regard to races; for, as the sociological comparison is instituted between peoples of different races, we are liable to confound the effects of race and of the social period. Again, climate comes in to offer a third source of interpretation of comparative phenomena, sometimes agreeing with and sometimes contradicting the two others, thus multiplying the chances of error and rendering the analysis which looked so promising

almost impracticable. Here, again, we see the indispensable necessity of keeping in view the positive conception of human development as a whole. By this alone can we be preserved from such errors as I have referred to, and enriched by any genuine results of analysis. We see how absurd in theory and dangerous in practice are the notions and declamations of the empirical school, and of the enemies of all social speculation; for it is precisely in proportion to their elevation and generality that the ideas of positive social philosophy become real and effective, — all illusion and uselessness belonging to conceptions which are too narrow and too special, in the departments either of science or of reasoning. But it is a consequence from these last considerations that this first sketch of sociological science, with the means of investigation that belong to it, rests immediately upon the primary use of a new method of observation, which is so appropriate to the nature of the phenomena as to be exempt from the dangers inherent in the others. This last portion of the comparative method is the historical method, properly so called, and it is the only basis on which the system of political logic can rest.

Comparison of Consecutive States

The historical comparison of the consecutive states of humanity is not only the chief scientific device of the new political philosophy. Its rational development constitutes the substratum of the science, in whatever is essential to it. It is this which distinguishes it thoroughly from biological science, as we shall presently see. The positive principle of this separation results from the necessary influence of human generations upon the generations that follow, accumulating continuously till it constitutes the preponderating consideration in the direct study of social development. As long as this preponderance is not directly recognized, the positive study of humanity must appear a simple prolongation of the natural history of man; but this scientific character, suitable enough to the earlier generations, disappears in the course of the social evolution, and assumes at length a wholly new aspect, proper to sociological science, in

which historical considerations are of immediate importance. And this preponderant use of the historical method gives its philosophical character to sociology in a logical as well as a scientific sense. By the creation of this new department of the comparative method sociology confers a benefit on the whole of natural philosophy, because the positive method is thus completed and perfected in a manner which, for scientific importance, is almost beyond our estimate. What we can now comprehend is that the historical method verifies and applies, in the largest way, that chief quality of sociological science, — its proceeding from the whole to the parts. Without this permanent condition of social study all historical labor would degenerate into a mere compilation of provisional materials. As it is in their development especially that the various social elements are interconnected and inseparable, it is clear that any partial filiation must be essentially untrue. Where, for instance, is the use of any exclusive history of any one science or art, unless meaning is given to it by first connecting it with the study of human progress generally? It is the same in every direction, and especially with regard to political history, as it is called, — as if any history could be other than political, more or less! The prevailing tendency to speciality in study would reduce history to a mere accumulation of unconnected delineations, in which all idea of the true filiation of events would be lost amidst the mass of confused descriptions. If the historical comparisons of the different periods of civilization are to have any scientific character, they must be referred to the general social evolution; and it is only thus that we can obtain the guiding ideas by which the special studies themselves must be directed.

In a practical view it is evident that the preponderance of the historical method tends to develop the social sentiment by giving us an immediate interest in even the earliest experiences of our race, through the influence which they exercised over the evolution of our own civilization. As Condorcet observed, no enlightened man can think of the battles of Marathon and Salamis without perceiving the importance of their consequences to the race at large. This kind of feeling should, when we are

treating of science, be carefully distinguished from the sympathetic interest which is awakened by all delineations of human life, in fiction as well as in history. The sentiment I refer to is deeper, because in some sort personal; and more reflective, because it results from scientific conviction. It cannot be excited by popular history in a descriptive form, but only by positive history, regarded as a true science, and exhibiting the events of human experience in coördinated series which manifest their own graduated connection. This new form of the social sentiment must at first be the privilege of the choice few; but it will be extended, somewhat weakened in force, to the whole of society, in proportion as the general results of social physics become sufficiently popular. It will fulfill the most obvious and elementary idea of the habitual connection between individuals and contemporary nations, by showing that the successive generations of men concur in a final end, which requires the determinate participation of each and all. This rational disposition to regard men of all times as fellow-workers is as yet visible in the case of only the most advanced sciences. By the philosophical preponderance of the historical method it will be extended to all the aspects of human life, so as to sustain, in a reflective temper, that respect for our ancestors which is indispensable to a sound state of society, and which is so deeply disturbed at present by the metaphysical philosophy.

As for the course to be pursued by this method, it appears to me that its spirit consists in the rational use of social series; that is, in a successive estimate of the different states of humanity which shall show the growth of each disposition, — physical, intellectual, moral, or political, — combined with the decline of the opposite disposition, whence we may obtain a scientific prevision of the final ascendency of the one and extinction of the other, care being taken to frame our conclusions according to the laws of human development. A considerable accuracy of prevision may thus be obtained for any determinate period and with any particular view, as historical analysis will indicate the direction of modifications even in the most disturbed times. And it is worth noticing that the prevision will be nearest the truth in

proportion as the phenomena in question are more important and more general; because then continuous causes are predominant in the social movement, and disturbances have less power. From these first general aspects the same rational certainty may extend to secondary and special aspects, through their statical relations with the first; and thus we may obtain conclusions sufficiently accurate for the application of principles.

If we desire to familiarize ourselves with this historical method, we must employ it first upon the past, by endeavoring to deduce every well-known historical situation from the whole series of its antecedents. In every science we must have learned to predict the past, so to speak, before we can predict the future; because the first use of the observed relations among fulfilled facts is to teach us by the anterior succession what the future succession will be. No examination of facts can explain our existing state to us, if we have not ascertained, by historical study, the value of the elements at work; and thus it is in vain that statesmen insist on the necessity of political observation, while they look no further than the present, or a very recent past. The present is, by itself, purely misleading, because it is impossible to avoid confounding principal with secondary facts, exalting conspicuous transient manifestations over fundamental tendencies, which are generally very quiet, and above all, supposing those powers, institutions, and doctrines to be in the ascendant, which are, in fact, in their decline. It is clear that the only adequate corrective of all this is a philosophical understanding of the past, that the comparison cannot be decisive unless it embraces the whole of the past, and that the sooner we stop, in traveling up the vista of time, the more serious will be our mistakes. We see statesmen going no further back than the last century to obtain an explanation of the confusion in which we are living; the most abstract of politicians may take in the preceding century, but the philosophers themselves hardly venture beyond the sixteenth, so that those who are striving to find the issue of the revolutionary period have actually no conception of it as a whole, though that whole is itself only a transient phase of the general social movement.

The most perfect methods may, however, be rendered deceptive by misuse; and this we must bear in mind. We have seen that mathematical analysis itself may betray us into substituting signs for ideas, and that it conceals inanity of conception under an imposing verbiage. The difficulty in the case of the historical method in sociology is in applying it, on account of the extreme complexity of the materials we have to deal with; but for this the method would be entirely safe. The chief danger is of our supposing a continuous decrease to indicate a final extinction, or the reverse; as in mathematics it is a common sophism to confound continuous variations, more or less, with unlimited variations. To take a strange and very marked example: if we consider that part of social development which relates to human food, we cannot but observe that men take less food as they advance in civilization. If we compare savage with more civilized peoples, in the Homeric poems or in the narratives of travelers, or compare country to town life, or any generation with the one that went before, we shall find this curious result, the sociological law of which we shall examine hereafter. The laws of individual human nature aid in the result by making intellectual and moral action more preponderant as man becomes more civilized. The fact is thus established both by the experimental and the logical way; yet nobody supposes that men will ultimately cease to eat. In this case the absurdity saves us from a false conclusion, but in other cases the complexity disguises much error in the experiment and the reasoning. In the above instance we must resort to the laws of our nature for that verification which, taken all together, they afford to our sociological analysis. As the social phenomenon, taken as a whole, is simply a development of humanity, without any real creation of faculties, all social manifestations must be found, if only in their germ, in the primitive type which biology constructed by anticipation for sociology. Thus every law of social succession disclosed by the historical method must be unquestionably connected, directly or indirectly, with the positive theory of human nature; and all inductions which cannot stand this test will prove to be illusory, through some sort of insufficiency in the observations on which

they are grounded. The main scientific strength of sociological demonstrations must ever lie in the accordance between the conclusions of historical analysis and the preparatory conceptions of the biological theory. And thus we find, look where we will, a confirmation of that chief intellectual character of the new science, — the philosophical preponderance of the spirit of the whole over the spirit of detail.

This method ranks, in sociological science, with that of zoölogical comparison in the study of individual life; and we shall see, as we proceed, that the succession of social states exactly corresponds, in a scientific sense, with the gradation of organisms in biology; and the social series, once clearly established, must be as real and as useful as the animal series.

Promise of a Fourth Method

When the method has been used long enough to disclose its properties, I am disposed to think that it will be regarded as so very marked a modification of positive research as to deserve a separate place; so that, in addition to observation properly so called, experiment, and comparison, we shall have the historical method as a fourth and final mode of the art of observing. It will be derived, according to the usual course, from the mode which immediately precedes it; and it will be applied to the analysis of the most complex phenomena.

I must be allowed to point out that the new political philosophy, sanctioning the old leadings of popular reason, restores to history all its scientific rights as a basis of wise social speculation, after the metaphysical philosophy had striven to induce us to discard all large considerations of the past. In the foregoing departments of natural philosophy we have seen that the positive spirit, instead of being disturbing in its tendencies, is remarkable for confirming, in the essential parts of every science, the inestimable intuitions of popular good sense, of which indeed science is merely a systematic prolongation, and which a barren metaphysical philosophy alone could despise. In this case, so far from restricting the influence which human reason has ever attributed to history in

political combinations, the new social philosophy increases it radically and eminently. It asks from history something more than counsel and instruction to perfect conceptions which are derived from another source; it seeks its own general direction through the whole system of historical conclusions.[1]

[1] The analysis of the familiar facts of everyday life deserves a place as a fifth method. It has probably been carried further by the Austrian school of economists in their development of the theory of value than by any other group of students in the general field of the social sciences. This method seeks to find in human nature itself the motives which produce social and economic activities, and to discover how these motives counteract and balance one another. So fruitful has been this method in economics that the student of sociology must look forward with confidence to its application to many of the wider problems of sociology and politics. No one can understand, to take a single example, the territorial expansion of the United States since the Spanish War who does not make a minute analysis of the motives and appetites of the people. Paradoxical as it may seem, this movement must be studied as a form of consumption of wealth, as the gratification of an appetite. It is therefore useless to point out that it is an expensive policy. It is also expensive to build fine houses, keep steam yachts or horses and carriages, or to own shooting boxes in the Adirondacks. If we conclude that the satisfaction derived from any of these forms of private consumption is worth the expense, that is sufficient. Similarly, if the people conclude that the satisfaction derived from such forms of public consumption as magnificent public buildings, large navies, or distant territorial possessions, is worth all the expense, they are not likely to be deterred by financial considerations. — ED.

III

RELATION OF SOCIOLOGY TO THE OTHER DEPARTMENTS OF POSITIVE PHILOSOPHY[1]

Relation to Biology

The subordination of social science to biology is so evident that nobody denies it in statement, however it may be neglected in practice. This contrariety between the statement and the practice is due to something else besides the faulty condition of social studies; it results also from the imperfection of biological science, and especially from its most conspicuous imperfection of all,—that of its highest part, relating to intellectual and moral phenomena. It is by this portion that biology and sociology are the most closely connected; and cerebral physiology is too recent, and its scientific state too immature, to have admitted, as yet, of any proper organization of the relations of the two sciences. Whenever the time for that process arrives, the connection will be seen to bear two aspects. Under the first, biology will be seen to afford the starting point of all social speculation, in accordance with the analysis of the social faculties of man, and of the organic conditions which determine its character. But, moreover, as we can scarcely at all investigate the most elementary terms of the social series, we must construct them by applying the positive theory of human nature to the aggregate of corresponding circumstances, regarding the small materials that we are able to obtain as rather adapted to facilitate and improve this rational determination than to show us what society really was at so early a period. When the social condition has advanced so far as to exclude this kind of deduction, the second

[1] From The Positive Philosophy of Auguste Comte, translated by Harriet Martineau, Vol. II, chap. iv, pp. 112–117. London and New York, 1853.

aspect presents itself, and the biological theory of man is implicated with the sociological in a less direct and special manner. The whole social evolution of the race must proceed in entire accordance with biological laws; and social phenomena must always be founded on the necessary invariableness of the human organism, the characteristics of which — physical, intellectual, and moral — are always found to be essentially the same, and related in the same manner at every degree of the social scale, no development of them attendant upon the social condition ever altering their nature in the least, or, of course, creating or destroying any faculties whatever, or transposing their influence. No sociological view can therefore be admitted at any stage of the science, or under any appearance of historical induction, that is contradictory to the known laws of human nature. No view can be admitted, for instance, which supposes a very marked character of goodness or wickedness to exist in the majority of men, or which represents the sympathetic affections as prevailing over the personal ones, or the intellectual over the affective faculties, etc. In cases like these, which are more common than the imperfection of the biological theory would lead us to expect, all sociological principles must be as carefully submitted to ulterior correction as if they supposed human life to be extravagantly long, or contravened in any other way the physical laws of humanity; because the intellectual and moral conditions of human existence are as real and as imperative as its material conditions, though more difficult to estimate, and therefore less known. Thus, in a biological view, all existing political doctrines are radically vicious, because, in their irrational estimate of political phenomena, they suppose qualities to exist among rulers and the ruled — here an habitual perverseness or imbecility, and there a spirit of concert or calculation — which are incompatible with positive ideas of human nature, and which would impute pathological monstrosity to whole classes, which is simply absurd. An example like this shows what valuable resources positive sociology must derive from its subordination to biology, and especially in regard to cerebral physiology, whenever it comes to be studied as it ought.

The students of biology have, however, the same tendency to exalt their own science at the expense of that which follows it, that physicists and chemists have shown in regard to biology. The biologists lose sight of historical observation altogether, and represent sociology as a mere corollary of the science of man, in the same way that physicists and chemists treat biology as a mere derivative from the inorganic philosophy. The injury to science is great in both cases. If we neglect historical comparison, we can understand nothing of the social evolution; and the chief phenomenon in sociology — the phenomenon which marks its scientific originality, that is, the gradual and continuous influence of generations upon each other — would be disguised or unnoticed for want of the necessary key, historical analysis. From the time that the influence of former generations becomes the cause of any modification of the social movement the mode of investigation must accord with the nature of the phenomena; and historical analysis therefore becomes preponderant, while biological considerations, which explained the earliest movements of society, cease to be more than a valuable auxiliary and means of control. It is the same thing as when, in the study of inorganic science, men quit deduction for direct observation. It is the same thing as when, in biology, observers proceed from a contemplation of the organism and its medium to an analysis of the ages of the individual being, as a principal means of investigation. The only difference is that the change in the instrument is the more necessary the more complex are the phenomena to be studied. This would have been seen at once, and political philosophy would have been admitted to depend on this condition for its advance, but for the prevalence of the vicious absolute spirit in social speculation, which, neglecting the facts of the case, forever strives to subject social considerations to the absolute conception of an immutable political type, no less adverse to the relative spirit of positive philosophy than theological and metaphysical types, though less indefinite. The consequence of this error is that social modifications proper to certain periods, and passing away with them, are too often supposed to be inherent in human nature, and therefore indestructible. Even

Gall, attending only to imperfect physiological considerations, and neglecting the social, wandered off into a sort of scientific declamation on the subject of war, declaring the military tendencies of mankind to be immutable, notwithstanding the mass of historical testimony which shows that the warlike disposition diminishes as human development proceeds. A multitude of examples of this kind of mistake might be presented, the most striking of which are perhaps in connection with theories of education, which are usually formed on absolute principles, to the neglect of the corresponding state of civilization.

The true nature of sociology is evident enough from what has been said. We see that it is not an appendix to biology, but a science by itself, founded upon a distinct basis, while closely connected, from first to last, with biology. Such is the scientific view of it. As to the method, the logical analogy of the two sciences is so clear as to leave no doubt that social philosophers must prepare their understandings for their work by due discipline in biological methods. This is necessary not only to put them in possession of the general spirit of investigation proper to organic science but yet more to familiarize them with the comparative method, which is the grand resource of investigation in both sciences. Moreover, there is a most valuable philosophical principle common to both sciences which remains to be fully developed before it can attain its final prevalence; I mean the positive version of the dogma of final causes. This principle belongs eminently to the study of living bodies, in which that distinction is especially marked, and where alone the general idea of it can properly be acquired. But, great as is its direct use in the study of individual life, it is applicable in a much more extensive and essential way in social science. It is by means of this principle that the new philosophy, uniting the two philosophical meanings of the word "necessary," exhibits as inevitable that which first presents itself as indispensable; and the converse. There must be something in it peculiarly in harmony with social investigations, as we are led up to it by the most opposite methods of approach, one evidence of which is De Maistre's fine political aphorism, "Whatever is necessary exists."

Relation to Inorganic Philosophy

If sociology is thus subordinated to biology, it must be scientifically related to the whole system of inorganic philosophy, because biology is so. But it is also connected with that system by immediate relations of its own.

In the first place, it is only by the inorganic philosophy that we can duly analyze the entire system of exterior conditions, — chemical, physical, and astronomical, — amidst which the social evolution proceeds, and by which its rate of progress is determined. Social phenomena can no more be understood apart from their environment than those of individual life. All exterior disturbances which could affect the life of individual man must change his social existence; and, conversely, his social existence could not be seriously disturbed by any modifications of the medium which should not derange his separate condition. I need therefore only refer to what I have said in regard to the influence of astronomical and other conditions on vital existence, for the same considerations bear on the case of social phenomena. It is plain that society, as well as individual beings, is affected by the circumstances of the earth's daily rotation and annual movement; and by states of heat, moisture, and electricity in the surrounding medium; and by the chemical conditions of the atmosphere, the waters, the soil, etc. I need only observe that the effect of these influences is even more marked in sociology than in biology, not only because the organism is more complex, and its phenomena of a higher order, but because the social organism is regarded as susceptible of indefinite duration, so as to render sensible many gradual modifications which would be disguised from our notice by the brevity of individual life. Astronomical conditions, above all others, manifest their importance to living beings only by passing from the individual to the social case. Much smaller disturbances would visibly affect a social condition than would disturb an individual life, which requires a smaller concurrence of favorable circumstances. For instance, the dimensions of the globe are scientifically more important in sociology than in biology, because they set bounds to the

ultimate extension of population, — a circumstance worthy of grave consideration in any positive system of political speculation. And this is only one case of very many. If we consider, in regard to dynamical conditions, what would be the effect of any change in the degree of obliquity of the ecliptic, in the stability of the poles of rotation, and yet more in the eccentricity of the earth's orbit, we shall see that vast changes in social life must be produced by causes which could not endanger individual existence. One of the first reflections that presents itself is that positive sociology was not possible till the inorganic philosophy had reached a certain degree of precision. The very conception of stability in human association could not be positively established till the discovery of gravitation had assured us of the permanence of the conditions of life; and till physics and chemistry had taught us that the surface of our planet has attained a natural condition too rare and too partial, apart from accidents, to affect our estimate; or, at least, that the crust of the globe admits of only variations so limited and so gradual as not to interfere with the natural course of social development, — a development which could not be hoped for under any liability to violent and frequent physico-chemical convulsions of any extent in the area of human life. There is thus more room to apprehend that inorganic philosophy is not advanced enough to supply the conditions of a positive polity, than to suppose that any real political philosophy can be framed in independence of inorganic science. We have seen before, however, that there is a perpetual accordance between the possible and the indispensable. What we must have we are able to obtain; and if there are, as in the case of the mutual action of different starry systems, cosmical ideas which are inaccessible to us, we know in regard to sociology now, as to biology before, that they are of no practical importance to us. Wherever we look, over the whole field of science, we shall find that, amidst the great imperfection of inorganic philosophy, it is sufficiently advanced in all essential respects to contribute to the constitution of true social science, if we only have the prudence to postpone to a future time investigations which would now be premature.

IV

THE GENERAL DISTINCTION BETWEEN SOCIOLOGY AND THE SPECIFIC SOCIAL SCIENCES[1]

Sociology as the science of society confines itself strictly to human association. It aims to show what is meant by association, how it is brought about, to what process of development it is subject, and what results it produces. Three questions respecting human society are supreme: What? Why? How? Since human association itself is our aim, it is evident that the stress is not to be placed on any particular kind of association. The subject is so large that we shall be obliged to confine ourselves to the general principles of society and to their general application.

In thus aiming at what marks human association as characteristic we also aim at what marks every particular form of human society. If personal forces are the constituent elements of association, then these forces must constitute every kind of society formed. The forces may differ in kind, in number, in intensity, and in degree of development; but no society can exist otherwise than by virtue of these forces. The personal forces exist only in individuals; therefore the idea of society includes that of individuals as possessors of the social forces. In a society for physical culture, for mental culture, for political ends, and for any purpose imaginable, the prime question pertains to the character of the personal forces involved. Just as being includes all being, but only in the most general sense as being, so association includes every society, but only in its most general sense.

Here, then, is the broad difference between social science itself and the specific social sciences: the former discusses whatever

[1] From Introduction to the Study of Sociology, by J. H. W. Stuckenberg pp. 75–77 (copyright, 1898, by A. C. Armstrong & Son, New York).

belongs to society as society and applies the general ideas obtained to the different associations; but each special social science confines itself to a particular phase of society. While sociology deals with the great principles or essences of association, and shows how they apply to all society, the specific social sciences specialize certain forms of association and give an account of their specific characteristics. More details are therefore to be expected in the limited social sciences than in the general social science.

Let us suppose that sociology gives a principiant account of the nature and working of the social forces; that would be a general interpretation of society. Among them are found industrial forces, which are consigned to economics for special treatment; there are also political forces, which are consigned to political science; there are ethical forces, which are consigned to ethics; and so with all the other social forces. Sociology is therefore the general social science of which the special social sciences are differentiations; it is the genus of which they are the species, the trunk on which they are the branches. While each social science has its specific sphere (the operation of specific social forces), it is not within the province of any one of them to determine what association itself is and how the various forms of society are related to it; that is the mission of the more general science, sociology.

After indicating the general relation of sociology to the special social disciplines, we now proceed to consider the relation of some of the latter to our subject.

Political Science[1]

Various limited societies have tried to absorb society itself and put themselves in its place. In the gens or the tribe, as an enlarged family, it is the family which embodies the social idea. Perhaps the members knew no other association. In Judaism and the Middle Ages the theocracy, the kingdom of God, or the church, is viewed as the essence of society. We can understand

[1] From Introduction to the Study of Sociology, pp. 78–81.

why Aristotle defines man as a political animal, when we remember how the individual was thought to exist for the state.

A part is put for the whole. It is a common mistake to concentrate the attention on a dominant or specially prized feature and lose sight of the rest. Thus a fixed idea is made the sole idea.

We have seen that the development of society beyond the political sphere was the condition for a larger conception of society. For us the state is but an arc in the social circle. Such an exclusive prominence may, however, still be given to the state as to make it difficult for independent or voluntary associations to receive recognition, or to be deemed of sufficient importance to justify social science as distinct from politics. What is left for sociology in such cases when the state absorbs the church, regulates the family, and determines the limits of associative action? By making the state everything, other societies become nothing. Governments have at times been disposed to suppress voluntary associations, for fear they might interfere with the prerogatives of the state, threaten its supremacy, or endanger its very existence. A governmental paternalism which aims so to control the affairs of the people that there may be no occasion for independent associative action hinders the organization of voluntary societies. Thus associations distinct from the state require a certain degree of prominence and importance in order to receive recognition and to deserve special treatment. In the very condition of society a reason is found for those historians who have made history consist chiefly of the state, its monarchs and officials, its diplomacy and its wars.

While we thus understand the exclusive attention to the state as the most perfect organization, yet throughout history, and particularly in modern times, we find numerous open and secret associations which are not included in political science. This is the more evident now since the conception of society has been enlarged to include all kinds of association, not merely formal organizations. Even in its largest sense the state cannot embrace all societies as constituent parts of the body politic. From the political forces numerous other social energies must be differentiated. The action of some of these the state may sanction by

its laws; the action of others may be left free, neither requiring nor receiving recognition.

Society existed before the state was formed. In what sense would that society be included in political science? Then we have not one state but many states, and the inclusion of all requires a science of international politics. But would such a comprehensive science include all nonpolitical associations and the whole of humanity? Some organizations, as churches, masonic and other lodges, and industrial societies, extend beyond the limits of a state or even of all states, reaching out to individuals and tribes not in a state. How can these be made a part of political science?

The science of politics needs differentiation from sociology and the other social sciences, in order that its own peculiar sphere may be made more distinct. The function of the state is among the most momentous problems of the times, but this function can be distinctly brought out only when contrasted with the other social forces. In Russia the government aims to make society, in the United States society makes the government; in Russia the progress of voluntary association is a menace to the government, in the United States independent organizations may ignore the very existence of the government. Neither theoretically nor practically is there agreement respecting the limits of the state and its relation to voluntary association.

The science of politics confines itself to the state, explaining its structure and functions, marking the peculiarity of its organization as distinguished from other societies, treating of the relations of the citizens to one another and to the state, and of the government to the governed, the constitution and laws, and all that belongs to the domain of national life. Some have questioned, as intimated above, whether the state ought to be included in sociology or treated separately as outside of society. It is unquestionably a form of association, and therefore within the scope of sociology; but it is only one of many social forms, and therefore political science cannot take the place of the science of society. The distinctive elements in the state, the peculiar authority it exercises, and the vast importance of

the subject must receive full recognition. Its sphere is that of collective authority and coercion; the sphere of other societies is that of coöperation. Owing to the importance and extent of politics it has become a special science; it is, however, a social science, which indicates its intimate relation to sociology. The state of the people is society in a truer sense than when the state is treated as an abstraction, or as a power hovering over the people, to which unconditional submission is required. We can indeed distinguish between social and political, referring the latter to all that pertains to the state, and the former to society as distinct from the state; but reflection shows that political action is social action as organized in the form of collective authority. The state, whatever its particular form and whoever exercises the authority, is sovereignty. The functions and limits of the sovereignty are among the most important questions of the day.

Political Economy [1]

The effort to make *a* social science *the* social science has been especially strong in political economy. So long as social science did not exist, but its need was deeply felt, it was not strange that a social study deemed of supreme importance should be treated as the missing discipline. Particularly is this exaltation of economics natural at a time when material interests are absorbing. Then political economy is apt to be regarded as not only furnishing the basis of social being but as also determining those interests which pertain to social well-being. At such times agricultural, industrial, and financial affairs are treated as the chief concerns of the state, as if, when they are attended to, all other things will take care of themselves. It is hardly an exaggeration to affirm that during the nineteenth century political economy has been the gospel of the leading industrial nations, the determining factor in individual and social life. Men have made wealth their divinity and its pursuit their religion. Political economy is to our age what politics was to Greece and Rome, and theology to the Middle Ages. And when society passes from the dominant

[1] From Introduction to the Study of Sociology, pp. 84–86.

political and theological to the economic stage, what wonder that political economy is made the social science?

Carl Marx, Friedrich Engels, and the social democracy give such an exclusive preëminence to political economy as to absorb in it the state and the whole of society. It is not strange that laborers whose existence is an unceasing struggle for the necessaries of life regard their industrial redemption as involving their entire social salvation. It must also be remembered that many students come from political economy as their specialty to sociology, so that their sociological theories are naturally affected by their economics.

Other factors have coöperated to reduce Aristotle's "political animal" to an industrial animal, and to transform the science of economics into the science of society. The marvelous progress of natural science has given prominence to material interests and wonderfully stimulated invention; this, together with the industrial development since the middle of the eighteenth century, has made ours the era of political economy.

One reason for creating social science is found in the necessity of showing that man is more than a beast of burden and has other than material interests. The new science will relegate political economy to its proper place, that is, at the bottom, the foundation. Society in order to live and accomplish life's purpose must have bread. We cannot build without a foundation, yet the foundation is not the house; but the importance of the foundation is heightened by increasing the value of the superstructure. Political economy is not degraded by putting it at the base instead of at the top of society.

History[1]

It has been claimed that history covers essentially the same ground which sociology proposes to occupy. History, it is said, deals with all that is significant in society and has left its impress on the development of humanity, seeking to discover the social forces, following the process of social evolution, and describing the achievements of society, while the individual is considered

[1] From Introduction to the Study of Sociology, pp. 88–91.

only so far as he leaves a permanent effect on human thought and life. History includes social action, the establishment and development of institutions, the course of politics, the theories of political economy prevalent at different times, and social phenomena in general. A specialty can be made of the organization and evolution of society among a particular people or in the world. But indispensable as history is for the student of sociology, it cannot construct for him a social science. Some writers on sociology have devoted so much attention to the description and history of society that the impression may be made that there is little else in the subject. The student will obtain the right point of view by discriminating between the aim of the historian and that of the sociologist. The former does not propose to construct but to describe systems. So long as no social science exists, the historian cannot determine the relation which events sustain to it. He does not invent mathematics or science or philosophy; only as they exist and exert an influence is it his province to give an account of them. But the sociologist does not merely describe society and seek the causes of its phenomena; he wants to construct a social system such as has yet no historical existence. His work is that of a scientist or philosopher; from the material furnished by the historian and by observation he draws the principles of society and infers the social laws, a process entirely different from that whose end is historical inquiry. The historian may give an account of the philosophies of Plato, Aristotle, Kant, and Hegel; but it would be as reasonable to expect him to construct them as to become the founder of sociology. As the science of society lies nowhere in history, we cannot look to the historian to discover it there.

That historic discipline which comes nearest covering the same ground as sociology is what the Germans call *Kulturgeschichte*, a history of culture or of civilization. This has been developed independently by German scholars and dates back farther than sociology. It aims to give a history of social evolution, tracing the various stages of culture through which humanity passed until the present degree of civilization was attained. If by this method historic laws of development are discovered, much

that certain sociologists have particularly emphasized will be accomplished. Why cannot this "culture history," as some have claimed, take the place of sociology?

The reason given above, that sociology is not an historical discipline, furnishes the answer. The tendency to reduce it to that is, however, significant and reveals a dominant characteristic of our times. A large class of persons may be designated as mere observers and empiric investigators, in distinction from rational inquirers and philosophic thinkers. Facts are gathered and classified and statistics accumulated till we know not what to do with them; this they regard as all that is required. Their work is essential, but only a beginning. Laws and principles and systems are not picked up from the surface of facts; they are intellectual constructions, a philosophy of the facts. The student must be a thinker in order to become a sociologist. Those who cannot distinguish between a history of culture and a system of culture, between a history and a science of society, are as rational as the empiric who takes a history of human conduct for a system of ethics. The sociologist is not merely intent on discovering what the social facts are; he also insists on knowing what they imply; he listens to what things say, and from this he tries to learn what they mean. Underlying the superficial trend, now so common, is the false supposition that the history of an object is its exhaustive interpretation. Many do not study philosophy *per se*, but its history, and then imagine that they understand philosophy, a conceit which would vanish if they truly became philosophers. An intelligent study of the history of science, of theology, of law, and of other disciplines implies a knowledge of these subjects. This is true of disciplines which have a long history; but sociology is yet to be constructed, and therefore can be still less completely studied in its history than the older disciplines.

The difference between the genesis of a subject and its critical interpretation is important. Scarcely any discrimination is more essential than that between history and observation, on the one hand, and the philosophic effort which, on the other, constructs a rational system. This will become more evident in the discussion of method. Fortunately there are evidences that the day is

waning when sensation was taken for thinking, and when men feared that by an intellectual mastery of things they were in danger of losing the grip of their reality. The rational element in philosophy, science, and in any system of thought adheres strictly to fact, but interprets the fact, relates it, goes to its source and results, and thus, by its explanation, brings out the true reality in place of what only seems to be reality. It is the science of society which makes us truly the possessors of society, intellectually its masters. What has been said will not, therefore, be taken as an indication that we can evolve, speculatively, from our brains systems without facts. History receives its proper place, and this cannot be the means of depreciating its importance.

Sociation[1]

Men are not, and cannot be, literally united in society; we say they are, but then we must define exactly what we mean. Their bodies are not united, their minds do not coalesce; they remain distinct as personalities. The individual personality in the same man remains distinct from his social personality; the strong man may at the same time grow in individuality and in sociality. In his private life (in all that pertains to him solely as an individual) the individual personality of a man acts; in society, the social personality. After what has been said, we shall not be misunderstood in stating that society consists of social personalities as distinguished from individual or private personalities. This is only another way of saying what was said before, — that society does not consist, strictly speaking, of individuals, but only of so much of them as is associated. "Social" we use here in the sense of all personal powers which act on others, whether coöperatively or antagonistically.

In order to make clear the notion that society consists not of (undiscriminated) personalities but of social personalities, a new word is needed, a word to designate what men share, what associates them, what interacts as a social force. Association refers to the associative factor, and would designate what we aim to

[1] From Introduction to the Study of Sociology, pp. 126–136.

mark as distinct, were that word confined to the associative element as the essence of society. Association is, however, used for a union of men, thus promoting the old error that men are united. But we seek a term which rejects the old error, which gives the idea of association, but confines this association to what is actually associated. Now it happens that "sociate" is used in the same sense as "associate"; but "sociation" is not in use. This noun we now form. We use it to designate those personal forces which interact between men; to indicate what men share, what associates. It stands for all that makes society as distinguished from the sum of individuals. Sociation thus gives the essence of society (that which makes society society), and differentiates it from all other objects.. So far as the personality is concerned, this new term distinguishes between the private and the social factors in men. Sociation deals exclusively with the social personality. Regarding a man as social plus private, it has nothing to do with the latter but to eliminate it from the sphere of its inquiries. When we say that certain elements in men are extrasocial, we do not mean that they are necessarily antisocial, but only that they do not belong to the social energies which constitute society. Sociation expresses the associative energies as distinct from what is not associative. In association *men* are conceived as the dominant factors, but in sociation the *forces* in men which become social are dominant. The opposite of association is men in isolation; the opposite of sociation is individual powers unassociated. Thus sociation always considers individuals only so far as they have associative interactive factors, leaving a large realm of the individual unconsidered.

Suppose I have a dozen steel horseshoe magnets lying on my table, for the purpose of studying magnetism. How do I contemplate them? Simply so far as they are magnets, — so far as their poles have attractive and repulsive forces. The fact that the magnets are steel concerns me only so far as steel is related to the magnetic forces. I might consider the steel by itself, its composition, its origin, its quality, its weight, its relation to other metals, etc.; but then I should have to enter other departments than that of magnetism. The steel in one horseshoe does not

pass over to the steel in another horseshoe; it is only the magnetic force that interacts; this I abstract from the steel itself and make the object of inquiry.

Let the twelve horseshoes represent twelve individuals. Sociation does not consider them as individuals, but only that in them which interacts between them; it drops the individuals as individuals, for the purpose of concentrating the attention on the attractive and repulsive forces of their magnetism which constitute society.

Sociation therefore deals with social energy and with individuals only as repositories of this energy.

In some cases the bond of union is so definite and simple as to be at once apparent. In a society for vocal culture or in a choir, in an art society or in a scientific association, in an economic combination or labor union, the specific and limited character of the aim and of the force exercised is unmistakable. In every such instance, especially in a choir, it is striking that the association is of individuals only as the possessors of the particular force used.

By thus making society consist of what is actually social, really interactive, and of nothing else, we get the fundamental knowledge respecting the relation of individuals to society. Those who say that society consists of individuals, and mean what they say, cannot discriminate between what is individual and what social in the same personality. If society is truly an organism of individuals, the totality of the individuals must be absorbed by the organism. Others, however, emphasize the individual to the neglect of the organism, as if he had no essential social relations. The conflict ceases so soon as society is discovered to consist only of so much of individuals as is socially interactive. Only that part of me which is literary belongs to the literary society which I help to form; all in me that is not literary is not absorbed by the society, but belongs to another sphere. Since there is an individual (private) personality distinct from the social personality, a man cannot properly be called an organ of society, because he is something besides such an organ; he has elements which are not social. The individual is an organ of society in the

same sense that the Capitol in Washington is a senate chamber. It is a senate chamber, but also much more.

Our view of sociation as distinct from association is proved correct by applying it to various social forms and controversies. Not only does it give new interpretations of what is otherwise obscure, but it also settles certain disputes otherwise interminable.

Let us apply the explanation here given to the old dispute between individualism and socialism. The point is whether the individual or society shall be regarded as supreme. Special prominence is given to the subject in economics in connection with the *laissez-faire* theory. So long as the individual is considered in his totality as a personality the controversy cannot be settled, because as such he is independent of society and also dependent.

But analyze the personality; recognize certain elements in the man which he shares with others, and which thus become social, while other elements remain individual and private; then the question is settled. It is at once seen that in that case individualism and socialism are no longer antagonistic, but each has a sphere in which it is supreme. There is a realm which belongs to a man as an individual, — his intellect, his conscience, his feelings, his private affairs. This realm as the sphere of individual freedom and individual rights is to be guarded sacredly against intrusion and interference. He may be instructed and persuaded, but in these sacredly personal affairs he cannot be coerced. This every just law recognizes. Here individualism reigns and must maintain its dominion.

The same individual, however, has a definite relation to society, and the social elements in him are as distinctly marked as the private. As a social personality he moves in the realm where socialism reigns; that is, social laws prevail here, just as personal or private laws in the other realm. If he wants to speak with his fellows, he must use their language; he must adapt himself to them or them to himself (both processes are social), in order to associate with them. In other words, he must adapt himself to social laws in the social sphere. He may go as he pleases while alone, but in a crowd he must go with the crowd, or as it

sees fit to let him go. If he takes the left side of the bridge at Dresden to cross the Elbe, he is jostled by the crowd coming the other way. Every few steps he is greeted with "*Rechts gehen*," and if he does not go to the right, — on the other side of the bridge, — a policeman may take him there, in order that he may move with and not against the multitude. This is but an illustration of the proverb that in Rome one must do as the Romans do.

Since, therefore, individualism and socialism are both justified, having distinct spheres instead of being antagonistic, the old controversy as to which shall prevail is settled. Both are to prevail, but each in its specific sphere. As a principle, each becomes false and unjust only when it encroaches on the sphere of the other. The new problem which confronts us in place of the old controversy is this: How much in the personality is purely individual, a private matter and therefore a man's own affair, which society may influence but cannot control? And how much is social, belongs to society, and therefore subject to social control?

We now have a law of universal application to the individual and to society. The individual (so far as social) acts on society and society acts on the individual, but the line between individual and social control is distinctly marked. Henceforth the aim should be to individualize all that is individual, and to socialize all that is social. Light is thus thrown likewise on education. The individual is to be developed to the utmost for his own sake; education is to aim at the best personality. He has value in himself, and this value is to be unfolded to the greatest worthiness. But he is also a member of society, and therefore to be educated for social ends. His individual perfection and his social perfection are to be organically united, so that his individual perfection makes him the more perfect socially, and that his social perfection exalts him as an individual.

The law established applies to politics, to business, and to all social affairs. In every department we must distinguish between what is private and what social in the personality. It is one and the same personality, but viewed in different aspects; now

self-centered, then going out into society. The demand is equally imperative that there be the greatest individuality and the most perfect sociality. Where the private and the social elements are properly harmonized the strongest individuality is likewise the strongest social power.

Our analysis of the individual into private and social functions removes another common error. The statement is constantly made that by entering society the individual sacrifices some of his liberty. Only if society is false will it demand that personal liberty be sacrificed. If it is meant that in society an individual cannot act as if he were isolated, the statement simply means that he cannot act contrary to the nature of things. In society a man cannot act as if he were out of society, for the reason that he is in it and not out of it. No true society interferes with the freedom inherent in man, but recognizes and encourages that freedom. By passing from isolation into social relations the individual changes his conditions but does not lose his freedom. Personally, in his private affairs, he is as free as ever he was; but while he retains all the real freedom he had in isolation, his life is augmented by entering society. Besides the real freedom he retains, he now sustains social relations and enters upon social action. Indeed, we may well question whether freedom applies to men isolated. Freedom from what? It is in society, where men can maintain their views in the face of false restraints, that freedom manifests itself.

Another error has been promoted by the theory that the individual is absorbed by society. It has been claimed that individuality will disappear as socialization advances. Hardly a more serious objection could be urged against socialization. Some claim that to associate is to stoop; but in many cases association means exaltation. Emerson says that in society "the virtue in most request is conformity"; but by resisting foolish conformity independence is developed. Tauler said, "I never mingled with men but I came home less of a man than I went out." All, however, are not Taulers; his standard was that of a mystic and he naturally favored solitude; and the society accessible may not have been of the best.

The objection that with socialization individuality vanishes is overthrown when the error on which it rests is exposed. The large sphere of individual freedom is also the sphere of individuality. To rob a man of his freedom by society would make society the means of slavery. The perfection of society is enhanced by social forces backed by individuality, — forces which prevent a dead monotony by promoting diversity in unity. The true society, which distinguishes between the private and the social elements in the personality, encourages individuality.

The view given of sociation throws important light on communism, socialism, and all forms of society. If society is composed of individuals, how can society absorb the individuals? What is it, then, that absorbs the individuals? There is nothing but individuals; therefore they must absorb one another. The necessary limit of communism is what men have in common.

Our explanation of society also interprets another phenomenon otherwise unaccountable. If society depends on individuals (instead of the social factors of individuals), how does it happen that often persons of superior personal excellence and unusual development make but poor society? They meet rarely, are little communicative when they do meet, further no great social interest, are perhaps indifferent even to their own community and state. The answer is that society is not literally constituted of men, but only of their social elements, whose exercise may be sadly neglected. The excellent men under consideration have been developed individually but not socially; each is imprisoned in his particular sphere and cannot enter that of his fellows. Perhaps abstract scholarship so absorbs the attention that the social organism receives none. Even institutions of learning may aggregate rather than associate the professors. Thus personal superiority does not involve social superiority. What men are determines their individual character; what they share determines their social character. The sociation of personal forces is not identical with the association of men.

This distinction also throws light on history. The sociation of an era is not an absolute test of the character of that era. The men may personally be of a high grade, while the sociation

is very imperfect. Thus a generation may be rich in biography and have little history; another generation may be rich in history and poor in biography. A thousand strong men isolated receive no attention in history, while much attention may be given to a thousand men less strong but organized. A million laborers in a country may be passed without mention by the historian; organized they may form the dominant historic current. In order to compare one generation with another we must inquire into the progress made by sociation in them. A thousand separate wires may be invisible at a short distance, or so scattered that only one is seen at a time; but wrought into a single coil, it is distinctly visible and of immense power; yet each wire taken by itself is no stronger than before. There are degrees of isolation and sociation in different ages, and they are important tests of the ages themselves. There is an age of Louis XIV, because sociation in general was so imperfect; hence by a single name that age is characterized in France. Then the sociation of revolutionary forces took place, and the French Revolution stands not for a name but for the volcanic energies of an infuriated people.

The view given of sociation shows why all attempts to apprehend society as an entity or a discrete object have failed. Society is not an organism like a plant or an animal. It is something very real, but not an indissoluble unit. It consists of forces which change constantly. Individuals come and go, their social energies vary, and thus society itself is subject to change. Sometimes the social mechanism is so fixed that there is a certain continuity even amid great changes of individuals, as in certain churches, states, and institutions. When we speak of the Catholic Church we mean a system of theoretical and practical energies (doctrines, institutions, practices); and the millions who belong to that church we think of as Catholic only so far as they are the embodiment of these energies.

Having now given an explanation of sociation and its relation to the ordinary sense of association, it will henceforth be understood what we mean when we use the old terms and speak of society as composed of individuals. When we have spoken thus

in preceding pages, the sense, after the explanation given, cannot be mistaken. Let association be used, but let it mean sociation. The beginner may find it difficult to treat society as a system of forces; but practice will overcome the difficulty, and he will soon wonder how he could ever imagine that society consisted of individuals as totalities, instead of the social energies of individuals.

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PART II — SOCIOLOGY AS A STUDY OF SOCIAL PROGRESS — THE DIRECTION OF SOCIAL PROGRESS

V

SOCIAL DYNAMICS; OR THEORY OF THE NATURAL PROGRESS OF HUMAN SOCIETY[1]

The Order of Evolution

Though the elements of our social evolution are connected and always acting on each other, one must be preponderant, in order to give an impulse to the rest, though they may, in their turn, so act upon it as to cause its further expansion. We must find out this superior element, leaving the lower degrees of subordination to disclose themselves as we proceed; and we have not to search far for this element, as we cannot err in taking that which can be best conceived of apart from the rest, notwithstanding their necessary connection, while the consideration of it would enter into the study of the others. This double characteristic points out the intellectual evolution as the preponderant principle. If the intellectual point of view was the chief in our statical study of the organism, much more must it be so in the dynamical case. If our reason required at the outset the awakening and stimulating influence of the appetites, the passions, and the sentiments, not the less has human progression gone forward under its direction. It is only through the more and more marked influence of the reason over the general conduct of man and of society that the gradual march of our race has attained that

[1] From The Positive Philosophy of Auguste Comte, translated by Harriet Martineau, Vol. II, chap. vi, pp. 156–180, London and New York, 1853.

regularity and persevering continuity which distinguishes it so radically from the desultory and barren expansion of even the highest of the animal orders, which share, and with enhanced strength, the appetites, the passions, and even the primary sentiments of man. If the statical analysis of our social organism shows it resting at length upon a certain system of fundamental opinions, the gradual changes of that system must affect the successive modifications of the life of humanity; and this is why, since the birth of philosophy, *the history of society has been regarded as governed by the history of the human mind.* As it is necessary, in a scientific sense, to refer our historical analysis to the preponderant evolution, whatever it may be, we must in this case choose, or rather preserve, the general history of the human mind as the natural guide to all historical study of humanity. One consequence of the same principle — a consequence as rigorous but less understood — is that we must choose for consideration in this intellectual history the most general and abstract conceptions, which require the exercise of our highest faculties. Thus it is the study of the fundamental system of human opinions with regard to the whole of phenomena — in short, the history of philosophy, whatever may be its character, theological, metaphysical, or positive — which must regulate our historical analysis. No other department of intellectual history, not even the history of the fine arts, including poetry, could, however important in itself, be employed for this object; because the faculties of expression, which lie nearer to the effective faculties, have always, in their palmiest days, been subordinated, in the economy of social progress, to the faculties of direct conception. The danger (which is inherent in every choice, and which is least in the choice that I have made) of losing sight of the interconnection of all the parts of human development may be partly guarded against by frequently comparing them, to see if the variations in any one corresponds with equivalent variations in the others. I believe we shall find that this confirmation is eminently obtainable by my method of historical analysis. This will be proved at once if we find that the development of the highest part of human interests is in accordance with that of the lowest,

— the intellectual with the material. If there is an accordance between the two extremes, there must be also between all the intermediate terms.

We have indicated the general direction of the human evolution, its rate of progress, and its necessary order. We may now proceed at once to investigate the natural laws by which the advance of the human mind proceeds. The scientific principle of the theory appears to me to consist in *the great philosophical law of the succession of the three states, — the primitive theological state, the transient metaphysical, and the final positive state,* — through which the human mind has to pass in every kind of speculation. This seems to be the place in which we should attempt the direct estimate of this fundamental law, taking it as the basis of my historical analysis, which must itself have for its chief object to explain and expand the general notion of this law by a more and more extended and exact application of it in the review of the entire past of human history. I hope that the frequent statement and application of this law throughout the preceding part of my work will enable me to condense my demonstration of it here, without impairing its distinctness or injuring its efficacy in such ulterior use as we shall have to make of it.

Law of the Three Periods

The reader is by this time abundantly familiar with the interpretation and destination of the law. All thoughtful persons can verify for themselves its operation in individual development, from infancy to manhood, as I pointed out at the beginning of this work. We can test it, as we have tested other laws, by observation, experiment, and comparison. I have done so through many years of meditation, and I do not hesitate to say that all these methods of investigation will be found to concur in the complete establishment of this historical proposition, which I maintain to be as fully demonstrated as any other law admitted into any other department of natural philosophy. Since the discovery of this law of the three periods, all positive philosophers have agreed on its special adaptation to the particular science in

which each was interested, though all have not made the avowal with equal openness. The only objections that I have encountered have related merely to the universality of its application. I hold it to be now implicitly recognized with regard to all the sciences which are positive; that is, the triple evolution is admitted in regard to all cases in which it is accomplished. It is only in regard to social science that its application is supposed to be impossible; and I believe the objection to signify nothing more than that the evolution is in this case incomplete. Social science has, with all its complexity, passed through the theological state, and has almost everywhere fully attained the metaphysical; while it has nowhere yet risen to the positive, except in this book. I shall leave the assertion of the law in regard to sociology to the demonstration which my analysis will afford, for those who cannot perceive in this volume, as a whole, the nascent realization of this last philosophical process could not be convinced by argument. Leaving the historical verification of the law, therefore, to the reader, I invite attention to its philosophical explanation. It is not enough that the succession of the three states is a general fact. Such generality would go for more in any other science than in sociology, because, as we have seen, our biological philosophy enables us to conceive of all the main relations of social phenomena *a priori*, independently of their direct investigation, and we need confirmation of our conceptions by direct knowledge of human nature and experience. An *a priori* conception of a law so important as this is of the deepest interest in the study of social dynamics; and, to confirm it, we must carefully mark the general grounds, derived from an exact knowledge, which have rendered indispensable on the one hand, and inevitable on the other, that succession of social phenomena which take their course under the operation of this law. The logical grounds have already been assigned at the outset of the work, and repeatedly since; and it is with the moral and social that we now have to do, and we can review them without subjecting ourselves to the reproach of severing the parts of a philosophical demonstration, which are in their nature bound up together and therefore inseparable.

The Theological Period

The necessity of the intellectual evolution I assert lies in the primary tendency of man to transfer the sense of his own nature into the radical explanation of all phenomena whatever. Philosophers tell us of the fundamental difficulty of knowing ourselves; but this is a remark which could not have been made till human reason had achieved a considerable advance. The mind must have attained to a refined state of meditation before it could be astonished at its own acts, — reflecting upon itself a speculative activity which must be at first incited by the external world. If, on the one hand, man must begin by supposing himself the center of all things, he must, on the other hand, next set himself up as a universal type. The only way that he can explain any phenomena is by likening them, as much as possible, to his own acts, — the only ones whose mode of production he can suppose himself, by the accompanying sensations, to understand. We may therefore set up a converse statement and say that man knows nothing but himself; and thus his philosophy, in his earliest stage, consists principally in transferring this spontaneous unity, more or less fortunately, into all subjects which may present themselves to his nascent attention. It is the highest proof of his philosophical maturity when he can, at length, apply the study of external nature to his own. When I laid this down as the basis of biological philosophy I intimated the extreme rarity of such an attainment. At the outset, under the inverse process, the universe is always subordinated to man in speculative as well as in active respects. We shall not have attained a truly rational position till we can reconcile these two great philosophical views, at present antagonistic, but admitting of being made mutually complementary, and, in my opinion, prepared for being so from this time forward. Such a harmony is even now barely conceivable in the brightest insight of philosophical genius, and there could have been no choice between the two courses in the earliest days of human development. The starting point must have been that which alone was naturally possible. This was the spontaneous origin of the theological philosophy, the elementary

spirit of which consists in explaining the intimate nature of phenomena and their mode of production, and in likening them as much as possible to the acts of human will, through our primary tendency to regard all beings as living a life analogous to our own, and often superior, from their greater habitual energy. This procedure is so eminently exclusive that men are unable to emancipate themselves from it, even in the most advanced stages of evolution, except by abandoning altogether these inaccessible researches and restricting themselves to the study of the laws of phenomena, apart from their causes. Whenever, at this day, the human mind attempts to pass these inevitable limits, it involuntarily falls again into the primary errors, even in regard to the simplest phenomena, because it recurs to an aim and point of view essentially analogous, in attributing the production of phenomena to special volitions internal or more or less external. One case presents itself as an example, of the simplest scientific character, — that of the memorable philosophical error of the illustrious Malebranche in regard to the explanation of the mathematical laws of the elementary collision of solid bodies. If such a mind, in such an age, could explain such a theory in no other way than by an express recurrence to the continuous activity of a direct and special providence, we cannot doubt the tendency of our reason towards a radically theological philosophy whenever we attempt to penetrate, on any ground whatever, the intimate nature of phenomena.

Intellectual Influence of the Theological Philosophy

The inevitableness of the theological philosophy is its most radical property and the first cause of its long ascendency. We have seen before that it was necessary, as the only possible beginning of our intellectual evolution, for the facts which must form the basis of a positive theory could not be collected to any purpose without some preliminary theory which should guide their collection. Our understanding cannot act without some doctrine, false or true, vague or precise, which may concentrate and stimulate its efforts and afford ground for enough speculative

continuity to sustain our mental activity. Our meteorological *observations*, as we call them, show us how useless may be vast compilations of facts, and how really unmeaning, while we are destitute of any theory whatever. Those who expect that the theory will be suggested by the facts do not understand what is the course necessarily pursued by the human mind, which has achieved all real results by the only effectual method, — of anticipating scientific observations by some conception (hypothetical in the first instance) of the corresponding phenomena. Such a necessity has already been shown to be especially marked in the case of social speculations, not only from their complexity but from the peculiarity that a long preparatory development of the human mind and of society constitutes the phenomena of the case, independently of all preparation of observers and all accumulation of observations. It may be worth observing that all the partial verifications of this fundamental proposition that we meet with in the different sciences confirm each other, on account of our tendency to unity of method and homogeneousness of doctrine, which would incline us to extend the theological philosophy from one class of speculations to another, even if we should not so treat each one of them separately.

The original and indispensable office of the theological philosophy is then to lead forth the human mind from the vicious circle in which it was confined by the two necessities of observing first in order to form conceptions and of forming theories first in order to observe. The theological philosophy afforded an issue by likening all phenomena whatever to human acts, — directly in the first instance, by supposing all bodies to have a life more or less like our own, and indirectly afterwards by means of the more durable and suggestive hypothesis which adds to the visible system of things an invisible world peopled by superhuman agents, who occasion all phenomena by their action on matter otherwise inert. The second stage is especially suitable to the human mind which begins to feel its difficulties and its needs; for every new phenomenon is accounted for by the supposition of a fresh volition in the ideal agent concerned, or, at most, by the easy creation of a new agent. However futile these

speculations may now appear, we must remember that in all times and everywhere they have awakened human thought by offering to it the only material which it could at first accept. Besides that there was no choice, the infant reason can be interested by nothing but sublime solutions obtained without any deep and sustained conflict of thought. We at this day find ourselves able after suitable training to devote ourselves to the study of the laws of phenomena, without heed to their first and final causes; but still we detect ourselves occasionally yielding to the infantine curiosity which pretends to a power of knowing the origin and the end of all things. But such severity of reason as we are capable of has become attainable only since the accumulation of our knowledge has yielded us a rational hope of finally discovering the natural laws that were altogether out of reach in the early states of the human mind; and the only alternative from total inactivity was, in those days, in the pursuit of the inaccessible subjects which are represented by the theological philosophy. The moral and social grounds of this philosophy were as necessary as the intellectual. Its moral influence was to inspire man with confidence enough for action, by animating him with a sense of a position of supremacy. There is something astonishing in the contrast between the actual powers of man in an infant state and the indefinite control which he aspires to exercise over external nature, just as there is in his expectation of understanding matters which are inaccessible to reason. The practical and the speculative expectation alike belong to the theological philosophy. Supposing all phenomena to be regulated by superhuman will, man may hope to modify the universe by his desires,—not by his personal resources but by the access which he believes himself to have to the imaginary beings whose power is unlimited; whereas, if he was aware from the beginning that the universe is subject to invariable laws, the certainty that he could no more influence than understand them would so discourage him that he would remain forever in his original apathy, intellectual and moral. We find ourselves able to dispense with supernatural aid in our difficulties and sufferings, in proportion as we obtain a gradual control over nature by a knowledge of her

laws; but the early races of men were in an opposite condition. They could obtain confidence, and therefore courage, only from above, and through the illusion of an illimitable power residing there, which could on any occasion afford them irresistible aid. I am not referring now to any hope of a future life. We shall see presently that it was not till a much later period that that hope exercised any important social influence; and even in more recent times we shall find that the effect of the religious spirit on the conduct of human life proceeds much more from belief in actual and special immediate aid than from the uniform perspective of a remote future existence. This seems to me the leading aspect of the remarkable state which is produced in the human brain by the important intellectual and moral phenomenon of prayer, the admirable properties of which, when it has attained its full physiological efficacy, are very manifest in the earliest stage of progress. After a long decline of the religious spirit the notion of *miracle* was naturally formed, to characterize the events which had become exceptional and were attributed to divine intervention; but the very conception shows that the general principle of natural laws had become familiar, and even preponderant, because the only sense of *miracle* was a transient suspension of natural laws. While the theological philosophy was all in all, there were no miracles, because everything was equally marvelous, as we see by the artless descriptions of ancient poetry, in which the commonest incidents are mixed up with the most monstrous prodigies, and undergo analogous explanations. Minerva intervenes to pick up the whip of a warrior in military games, as well as to protect him against a whole army; and in our own time the devotee is as importunate in praying for his smallest personal convenience as for the largest human interests. In all ages the priest has been more occupied with the solicitations of his flock about immediate favors of Providence than with their care for their eternal state. However this may be, we see that it is a radical property of the theological philosophy to be the sole support and stimulus of man's moral courage, as well as the awakener and director of his intellectual activity. To this we must add as another attraction of man to this philosophy, that

the affective influence comes in to fortify the speculative. Feeble as are the intellectual organs, relatively considered, the attractive moral perspective of an unbounded power of modifying the universe by the aid of supernatural protectors must have been most important in exciting mental action. In our advanced state of scientific progress we can conceive of the perpetual pursuit of knowledge for the sake of the satisfaction of intellectual activity, joined to the tranquil pleasure which arises from the discovery of truth; yet it is doubtful whether such natural stimulus as this would always suffice without collateral instigations of glory, of ambition, or of lower and stronger passions, except in the case of a very few lofty minds, — and with them only after training in the requisite habits. And nothing of this kind can be supposed possible in the early days, when the intellect is torpid and feeble and scarcely accessible to the strongest stimulus; nor yet afterwards, when science is so far advanced as to have attained some speculative success. In the working out of such speculation the mental activity can be sustained by nothing short of the fictions of the theological philosophy about the supremacy of man and his unbounded empire over external nature, as we have seen in regard to astrology and alchemy. In our own time, when there are enlightened men who hold such delusions in regard to social speculations alone, we see how irrationally they expect to modify at will the whole course of political phenomena, in which they could not take any adequate scientific interest without such an expectation.[1] What we see of the influence of this view in maintaining the old polities may give us some faint idea of its power when it pervaded every part of the intellectual system and illusion beset the reason of man whichever way he turned. Such then was the moral operation of the theological philosophy, — stimulating man's active energy by the offer, in the midst of the troubles of his infantine state, of absolute empire over the external world, as the prize of his speculative efforts.

[1] Were Comte writing to-day, he would doubtless find illustrative material in the doctrine of "manifest destiny." The confidence inspired by the belief that the American people are the chosen instrument of Providence for the civilizing of the heathen is doubtless a factor in their success. — ED.

Social Influences of the Theological Philosophy

The social evidences under this head will be fully treated in the following chapters, so that we may dismiss them now with a very short notice, important as they are, and the more easily because this class of evidences is the most indisputable of the three. There are two views which must be considered in relation to the high social office of the theological philosophy: first, its function in organizing society; and, next, its provision for the permanent existence of a speculative class. As to the first, we must perceive that the formation of any society, worthy to be so called, supposes a system of common opinions such as may restrain individual eccentricity; and such an influence, if needful now, when men are bound together by such a concurrence of obligations as high civilization introduces, must be absolutely indispensable in the infancy of society, when families adhere to each other so feebly by means of relations as precarious as they are defective. No concurrence of interests, nor even sympathy in sentiment, can give durability to the smallest society, if there be not intellectual unanimity enough to obviate or correct such discordance as must inevitably arise. It has been shown that, indolent as our intellectual faculties are in comparison with the others, reason must rule not only domestic but also social and yet more political life; for through it alone can there be any organization of that reaction of society on the individual which appoints the function of government and absolutely requires a system of common opinions about nature and man. Such a system, then, is a political necessity, and especially in the infancy of society. But, on the other hand, we must admit that the human mind, having thus furnished a basis for social organization, must depend for its further development on society itself, whose expansion is really inseparable from that of human intelligence. Here we see that society is in a vicious circle in a political as well as a logical view, through the opposition of two equal necessities; and here again the only possible issue is afforded by the theological philosophy. It directs the first social organization as it forms a system of common opinions, and it does it by forming such a system.

Because we see it now in such a state of decomposition that its advocates lose sight of the unity of opinions that it once secured, and are themselves involved in intellectual discordance, we must not forget how, in those days of vigor by which it must be judged, it established an intellectual communion which constituted its most remarkable political function. The police consideration of a future life is wrongly attributed to this period of human society. It arose long after, and was of very inferior importance to the intellectual agreement which preceded it; and its operation would not be so erroneously exaggerated but that religion has so far faded out of men's minds as to leave no other strong habitual remembrance than of its grossest impressions.

Institution of a Speculative Class

Another way in which the theological philosophy was politically indispensable to human progress was by instituting, in the midst of society, a special class regularly devoted to speculative activity. In this view the social supremacy of the theological philosophy has lasted to our own time. It is scarcely possible for us to form any but an indirect idea of the difficulty of establishing, in the earliest period of society, any permanent division between theory and practice, such as is effected by the existence of a class regularly occupied with speculation. Even now, amidst all the refinement of our mental habits, we find extreme difficulty in duly estimating any new operation which has no immediate practical bearing; and by this we may imperfectly understand how impossible it was, in the remotest ages, to institute among populations of warriors and slaves a corporation that should be disengaged from military and industrial employments, and whose activity should be mainly of an intellectual kind. Such a class could, in those times, have been neither established nor tolerated if it had not been introduced in the natural course of social movement and invested with authority beforehand by the influence of the theological philosophy. Thus the political function of that philosophy was to establish a speculative body whose social existence not only admitted of no preparatory discussion but was

itself an indispensable preparation for the regular organization of all other classes. Whatever might have been the confusion of intellectual labor and the inanity of the leading investigations of the sacerdotal orders, it is not the less true that the human mind owes to them the first effectual separation between theory and practice, which could take place in no other manner. Mental progress, by which all other progress is directed, would certainly have been destroyed at its birth, if society had continued to be composed of families engaged in the cares of material existence, or, as the only alternative, in the excitement of a brutal military activity. Any spiritual expansion supposes the existence of a privileged class, enjoying the leisure indispensable to intellectual culture, and at the same time urged, by its social position, to develop to the utmost the kind of speculative activity compatible with the primitive state of humanity; and this description is answered by the sacerdotal institution established by the theological philosophy. Though, in the decrepitude of the old philosophy, we see the theological class sunk in mental lethargy, we must not forget that but for their activity in the days of its prime, human society would have remained in a condition much like that of a company of superior monkeys. By forming this speculative class, then, the theological philosophy fulfilled the political conditions of a further progression of the human mind.

Such are the qualities, intellectual, moral, and social, which secured the supremacy of the theological philosophy at the outset of human progress. This is the only part of my sociological demonstration which is at all open to dispute, and this is one reason why I have dwelt so long upon it, but it is not the only reason. Another and a greater is that this view contains the radical principle of the whole demonstration, the remainder of which will not detain us long.

The Positive Stage

If this starting point of human development has been placed beyond dispute, the final or positive stage does not admit of it. We have seen enough of the establishment of the positive philosophy in other departments to be satisfied of its destined

prevalence in sociology. For the same reasons which explain and justify the early supremacy of the theological philosophy we see that it must be a provisional state, for its supremacy was owing to its aptitude to meet the needs of a primitive state of humanity; and those needs are not the same, nor requiring the same philosophy to satisfy them, as those which arise in a more advanced stage of human evolution. After having awakened human reason and superintended its progress in the absence of a more real philosophy, theology began to repress the human mind from the first moment of its coming into direct antagonism with the positive philosophy. And in the same way, in its moral relations, it imparted at first a consolatory confidence and active energy, which have become transmuted, by too long a duration, into oppressive terror and a faint apathy which have been too common a spectacle, since it has been driven to struggle to retain its hold instead of extending its dominion. There is no more question of the moral than of the intellectual superiority and final supremacy of the positive philosophy, capable as it is of developing in us an unshaken vigor and a deliberate steadfastness, directly derived from our own nature, without any external assistance or any imaginary hindrance. And again, in regard to its social bearings, though the ascendency of the theological philosophy lasted longer on this ground than on the other two, it is evident enough at present that instead of uniting men, which was its proper function at first, it now divides them, so that after having created speculative activity it has ended with radically hindering it. The function of reuniting, as of stimulating and directing, belongs more and more, as religious belief declines, to the conceptions of positive philosophy, which alone can establish that intellectual community all over the world on which the great future political organization is to be grounded. The intellectual destination of the two philosophies has been sufficiently established in our review of all the departments of natural philosophy. Their moral and social destination will be illustrated in succeeding chapters of this volume. My historical analysis will explain to us the continuous decline of the one and the corresponding rise of the other, from the earliest period of human progression.

It may appear paradoxical to regard the theological philosophy as in a steadily declining state intellectually, at the very time that it was fulfilling its most exalted mission; but we shall find satisfactory scientific evidence that Catholicism, its noblest social work, must necessarily be its last effort, on account of the germs of disorganization which must thenceforth grow more and more rapidly. We need here, therefore, only assign the general principle of the inevitable tendency of the human mind toward an exclusive positive philosophy throughout the whole range of the intellectual system.

Attempted Union of the Two Philosophies

The general, like the individual, human mind is governed by imagination first, and then, after a sufficient exercise of the faculties at large, more and more by reason. The same grounds on which the process takes place in the individual case determine that of the whole species; and with the more certainty and power on account of the greater complexity and perpetuity of the social organism. Supreme as the theological philosophy once was, it is certain that such a method of philosophizing was resorted to only because no other was possible. Wherever there has been a choice in regard to any subject whatever, man has always preferred the study of the laws of phenomena to that of their primary causes, though prior training, which there has been no rational education adapted to counteract, has often occasioned a lapse into his old illusions. Theological philosophy has, however, never been absolutely universal; that is, the simplest and commonest facts in all classes of phenomena have always been supposed subject to natural laws, and not to the arbitrary will of supernatural agents. Adam Smith made the remark that there never was, in any age or country, a god of weight. In more complex cases, if only the relations of phenomena are seen to be invariable, the most superficial observer recognizes the presence of law. Even among moral and social phenomena, where the entrance of positive philosophy has been interdicted, we are all obliged to act daily on the supposition of natural laws, in

order to conduct the common affairs of life; for all forecast would be impossible if we supposed every incident to be ascribable to supernatural agency, and no other resource therefore possible than prayer, for influencing the course of human actions. It is even noticeable that the principle of the theological philosophy itself lies in the transference of the first beginnings of the laws of human action to the phenomena of external nature; and thus the germ of the positive philosophy is at least as primitive as that of the theological philosophy itself, though it could not expand till a much later time. This idea is very important to the perfect rationality of our sociological theory, because, as human life can never present any real creation, but only a gradual evolution, the final spread of the positive spirit would be scientifically incomprehensible, if we could not trace its rudiments from the very beginning. From that scarcely appreciable presence at the beginning, the rise of the positive spirit has been recognizable, in proportion to the extension and generalization of our observations, and the theological philosophy has been slowly but steadily driven back within the narrowing limits of phenomena whose natural laws were still unknown. Thus was the function of the old philosophy clearly a provisional one, — to maintain our mental activity by the only exercise open to it till the positive philosophy should usher it into the wide field of universal knowledge made accessible to the whole race. This destination has only recently exhibited itself in an unquestionable way since the disclosure of natural laws in phenomena so numerous and so various as to suggest the necessary existence of analogous laws in all other departments, however remote their actual discovery may be.

It does not follow, from anything that I have said, that the two philosophies were always visibly opposed to each other. On the contrary the physical study must have succumbed to the theological spirit if they had seemed at the outset to be incompatible. In fact, the study of the laws of phenomena appeared, for a long course of time, to agree very well with the investigation into their causes. It was only when observations became more connected, and disclosed important relations, that the radical opposition of the two doctrines began to be felt. Before the

antagonism was avowed the positive spirit manifested its repugnance to the futile absolute explanations of the theological philosophy, and the theological spirit lavished its disdain on the circumspect march and modest investigations of the new school, while still there was no idea that the study of real laws was irreconcilable with that of the essential causes. When natural laws of considerable scope were at length discovered, the incompatibility became clear between the preponderance of imagination and that of reason, between the absolute spirit and the relative, and, above all, between the ancient hypothesis of the sovereign direction of events by an arbitrary will and the growing certainty that we can foresee and modify them by the rational access of human wisdom. It is only in our own time that the antagonism has been extended to all parts of the intellectual field; and even up to the last moment the students of special subjects have believed that by confining themselves to the investigation of natural laws, and paying no attention to the nature of beings and mode of production of phenomena, they might find physical researches compatible with the explanations of theology; while theology made its own concessions in the form of a provisional notion of a universal providence, combined with special laws which it had imposed on itself. The conduct of Catholicism in interdicting the habitual use of miracle and prophecy, which prevailed so largely in ancient times, seems to me to present in religious affairs a transient situation analogous to that which is exhibited by what is called the institution of constitutional monarchy in the political world, each being in its own way an indisputable symptom of decline. However this may be, the insufficiency of the theological philosophy manifests itself to popular observation in that form of popular evidence which can alone reach the majority of mankind, — in its comparison with its opponent in the application of means. The positive philosophy enables us to foresee and to modify natural events, and thus satisfies more and more, as it advances, the most urgent intellectual needs of humanity, while the ancient philosophy remains barren; so that its fanciful explanations are more and more neglected, while the new philosophy obtains a perpetually

firmer hold on the public reason. Those who have remained faithful to their attachment to the theological philosophy make no practical use of it in their daily life and ground their predilection for it on its characteristic generality, so that when its antagonist shall have become systematized as fully as it is destined to be, the ancient philosophy will have lost the last attribute which has ever entitled it to social supremacy.

The Metaphysical Period

We have now only to take a cursory survey of the intermediate state. I have pointed out more than once before, that any intermediate state can be judged of only after a precise analysis of the two extremes. The present case is a remarkable illustration of this necessity; for, if it is once admitted that the human mind must set out from the theological state and arrive certainly at the positive, we may easily understand how it must pass through the metaphysical, which has no other destination than to afford a transition from the one to the other. The bastard and mobile character of the metaphysical philosophy fits it for this office, as it reconciles, for a time, the radical opposition of the other two, adapting itself to the gradual decline of the one and the preparatory rise of the other, so as to spare our dislike of abrupt change and to afford us a transition almost imperceptible. The metaphysical philosophy takes possession of the speculative field after the theological has relinquished it and before the positive is ready for it; so that in each particular case the dispute about the supremacy of any of the three philosophies is reduced to the mere question of opportuneness, judged by a rational examination of the development of the human mind. The method of modification consists in substituting gradually the entity for a deity when religious conceptions become so generalized as to diminish perpetually the number of supernatural agents as well as their active intervention, and at length arrive, professedly if not really, at rigorous unity. When supernatural action loses its original specialty it consigns the immediate direction of the phenomenon to a mysterious entity at first emanating

from itself, but to which daily custom trains the human mind to refer more and more exclusively the production of each event. This strange process has favored the withdrawal of supernatural causes and the exclusive consideration of phenomena, — that is, the decline of the theological and the rise of the positive spirit. Beyond this the general character of this philosophy is that of the theological, of which it is only a modification, though the chief. It has an inferior intellectual consistency and a much less intense social power; so that it is much better adapted for a critical function than for any real organization; and it is those very qualities which disable it for resistance to the growth of the positive spirit. On the one hand, the increasing subtlety of metaphysical speculations is forever reducing their characteristic entities to mere abstract denominations of the corresponding phenomena, so as to render their own impotence ridiculous when they attempt explanations, — a thing which would not have been possible, in an equal degree, with purely theological forms. On the other hand, its deficiency of organizing power, in consequence of its radical inconsistency, must prevent its maintaining any such political struggle as theology maintained against the spread of positive social philosophy. However, it obtains a respite by its own equivocal and mobile nature, which enables it to escape from rational discussion even more than the theological philosophy itself, while the positive spirit is as yet too imperfectly generalized to be able to attack the only substantial ground of their common authority, — the universality which they can boast but which it has not. However this may be, we must admit the aptitude of metaphysics to sustain provisionally our speculative activity on all subjects till it can receive more substantial aliment, at the same time carrying us over from the theological *régime* further and further in the direction of the positive. The same aptitude appears in its political action. Without overlooking the serious intellectual and moral dangers which distinguish the metaphysical philosophy, its transitional quality accounts to us for the universal ascendency which it has provisionally obtained among the most advanced societies, which cannot but have an instinctive sense of some indispensable office to be fulfilled by

such a philosophy in the evolution of humanity. The irresistible necessity of this temporary phase is thus on all grounds as unquestionable as it could be prior to the direct analysis to which it will be subjected in the course of our historical review.

Coexistence of the Three Periods

During the whole of our survey of the sciences I have endeavored to keep in view the great fact that all the three states, theological, metaphysical, and positive, may and do exist at the same time in the same mind in regard to different sciences. I must once more recall this consideration and insist upon it, because in the forgetfulness of it lies the only real objection that can be brought against the grand law of the three states. It must be steadily kept in view that the same mind may be in the positive state with regard to the most simple and general sciences, in the metaphysical with regard to the more complex and special, and in the theological with regard to social science, which is so complex and special as to have hitherto taken no scientific form at all. Any apparent contradiction must certainly arise, even if it could be shown to exist from the imperfection of our hierarchical arrangement, and not from the law of evolution itself. This once fully understood, the law itself becomes our guide in further investigation, as every proved theory does, by showing us by anticipation what phenomena to look for and how to use those which arise; and it supplies the place of direct exploration when we have not the necessary means of investigation. We shall find that by this law alone can the history of the human mind be rendered intelligible. Having convinced ourselves of its efficacy in regard to all other sciences, and in interpreting all that has yet come to pass in human history, we must adhere to it steadily in analyzing the present and in forming such anticipation of the future as sociology, being a real science, enables us to rely upon.

To complete my long and difficult demonstration I have only now to show that material development as a whole must follow a course not only analogous but perfectly correspondent with that of intellectual development, which as we have seen governs every other.

Corresponding Material Development

All political investigation of a rational kind proves the primitive tendency of mankind in a general way to a military life, and to its final issue in an industrial life. No enlightened mind disputes the continuous decline of the military spirit and the gradual ascendency of the industrial. We see now under various forms and more and more indisputably, even in the very heart of armies, the repugnance of modern society to a military life. We see that compulsory recruiting becomes more and more necessary, and that there is less and less voluntary persistence in that mode of life. Notwithstanding the immense exceptional development of military activity which was occasioned by anomalous circumstances at the beginning of the present century, our industrial and pacific instincts have returned to their regular course of expansion, so as to render us secure of the radical tranquillity of the civilized world, though the peace of Europe must often appear to be endangered through the provisional deficiency of any systematic organization of international relations, — a cause which though insufficient to produce war keeps us in a state of frequent uneasiness. We need not then go over again the proof of the first and last terms of the evolution, which will be abundantly illustrated by the historical analysis that I shall offer. We have only to refer the facts of human experience to the essential laws of human nature and the necessary conditions of social development, — a scientific procedure which has never yet been attempted.

Primitive Military Life

As long as primitive man was averse to all regular toil, the military life alone furnished a field for his sustained activity. Apart from cannibalism, it offered the simplest means of subsistence. However deplorable the necessity, its universal prevalence and continuous development, even after subsistence might have been obtained by other means, proves that the military *régime* must have had some indispensable, though provisional, office to fulfill in the progression of the race. It was indeed the

only one under which human industry could make a beginning, — in the same way that the scientific spirit could not have arisen without the protection of the religious. The industrial spirit supposed the existence of a considerable social development, such as could not have taken place till isolated families had been connected by the pursuits of war. The social and yet more the political properties of military activity are, in their early stages, perfectly clear and decisive, and, in short, fully appropriate to the high civilizing function which they had to fulfill. It was thus that habits of regularity and discipline were instituted and the families of men were brought into association for warlike expeditions or for their common defense. The objects of association could not possibly be more obvious or urgent, nor the elementary conditions of concurrence more irresistible. In no other school could a primitive society learn order, as we may see at this day in the case of those types of ancient humanity, — the exceptional individuals who cannot now be made amenable to industrial discipline. This ascendency of the military spirit was indispensable not only to the original consolidation of political society but yet more to its continuous extension, which could not otherwise have taken place but with excessive slowness; and such extension was, to a certain degree, indispensable to the final development of human industry. Thus, then, we find humanity involved in the same kind of vicious circle with regard to its temporal as we saw it to be with regard to its spiritual progress; and in both cases an issue was afforded by the fortunate expansion of a preliminary tendency. In fact, the necessary basis of the military *régime* has everywhere been the individual slavery of the producing class, by which warriors were allowed the full and free development of their activity. We shall see hereafter that the great social operation which was to be accomplished in due time by the continuous progression of a military system, powerfully instituted and wisely carried out, must have failed in its earliest stages. We shall also see how this ancient slavery was the necessary preparation for the final prevalence of the industrial life, by imposing on the majority of the race, irresistibly and exclusively, that toil to which man is constitutionally averse, though an ultimate condition of

laborious perseverance was in store for all. To view the case without prejudice we must transport ourselves to those primitive times, and not regard the slavery of that age with the just horror with which we view that of modern times, — the colonial slavery of our day, which is truly a social monstrosity, existing as it does in the heart of an industrial period, subjecting the laborer to the capitalist in a manner equally degrading to both. The ancient slavery was of the producer to the warrior, and it tended to develop their respective energies so as to occasion their final concurrence in the same social progression.

The Military Régime Provisional

Necessary as this military *régime* was, it was not the less merely provisional. While industrial activity has the fine quality of bearing the most energetic extension among all individuals and nations without making the rise of the one irreconcilable with that of the other, it is evident that the exaltation of the military life among any considerable portion of the race must occasion the restriction of all the rest; this being, in fact, the proper function of the *régime* in regard to the whole field of civilization. Thus, while the industrial period comprehends the whole term of human progress under natural laws, — that is, the whole future that we can conceive of, — the military period could last no longer than the formation of those preparatory conditions which it was its function to create. This end was attained when the chief part of the civilized world was at length united under the same rule; that is, in regard to Europe, when Rome had completed its conquests. From that time forward military activity had neither object nor aliment; and from that time forward, therefore, it declined, so as no longer to disguise that gradual rise of the industrial spirit which had been preparing during the interval. But, notwithstanding this connection, the industrial state was so radically different from the military as to require an intermediate term; and in the same way that, in the spiritual evolution, an intermediate term was required between the theological and the positive spirit. In both cases the middle phase

was fluctuating and equivocal. We shall see hereafter that, in the temporal case, it consisted, first, in a substitution of a defensive for an offensive military organization, and afterwards in an involuntary general subordination, more and more marked, of the military spirit to the instinct of production. This transitory phase being the one in which we live, its proper nature, vague as it is, can be estimated by direct intuition.

Such is the temporal evolution briefly surveyed in its three periods. No philosophical mind can help being struck by the analogy between this indisputable progression and our primary law of succession of the three states of the human mind. But our sociological demonstration requires that we should establish the connection between them by exhibiting the natural affinity which has always existed, first between the theological and the military spirit and afterwards between the scientific and industrial, and, consequently, between the two transient functions of the metaphysicians and the legists. This elucidation will impart the last degree of precision and consistency to my demonstration, and will thus establish it as the rational basis of the entire historical analysis which will follow.

Affinity between the Theological and Military Régime

The occasional rivalry between the theological power and the military, which history presents, has sometimes disguised their radical affinity, even in the eyes of philosophers. But, if we consider, there can be no real rivalry but among the different elements of the same political system, in consequence of that spontaneous emulation which, in all cases of human concurrence, must become more earnest and extensive as the end is more important and indirect, and therefore the means more distinct and independent, without the participation, voluntary or instinctive, being thereby prevented. When two powers equally energetic rise, increase, and decline together, notwithstanding the difference of their natures, we may be assured that they belong to the same *régime*, whatever may be their habitual conflicts. Conflict indicates radical incompatibility only when it takes place between

two elements employed in analogous functions, and when the gradual growth of the one coincides with the continuous decline of the other. As to the present case, it is evident that in any political system there must be an incessant rivalry between the speculative and the active powers, which, through the imperfection of our nature, must often be inclined to ignore their necessary coördination and to disdain the general limits of their reciprocal attributes. Notwithstanding the social affinity between science and industry, we must look for similar conflict between them hereafter, in proportion to the political ascendency which they will obtain together. We see signs of it already in the intellectual and moral antipathy of science to the natural inferiority of these labors of industry which yet are the means of wealth, and in the instinctive repugnance of industry to the abstraction which characterizes science, and to the just pride by which it is animated.

Having dispatched these objections, we may now contemplate the strong bond which unites the theological and military powers, and which has in all ages been felt and honored by all enlightened men who have borne a part in either, notwithstanding the passions of political rivalry. It is plain that no military system could arise and endure without the countenance of the theological spirit, which must secure for it the complete and permanent subordination essential to its existence. Each period imposes equal exigencies of this sort in its special manner. At the outset, when the narrowness and nearness of the aim required a less absolute submission of mind, social ties were so weak that nothing could have been done but for the religious authority with which military chiefs were naturally invested. In more advanced times the end became so vast and remote, and the participation so indirect, that even long habits of discipline would not have secured the necessary coöperation without the aid of theological convictions occasioning blind and involuntary confidence in military superiors. It was in very ancient times that the military spirit had its great social function to fulfill; and it was in those ancient times that the two powers were usually found concentered in the same chiefs. We must observe also that it was not every spiritual

authority whatever that would have sufficiently suited the foundation and consolidation of military government, which, from its nature, required the concurrence of the theological philosophy, and no other; for instance, though natural philosophy has rendered eminent service in modern times to the art of war, the scientific spirit, which encourages habits of rational discussion, is radically incompatible with the military spirit; and we know that the subjection of their art to the principles of science has always been bitterly deplored by the most distinguished soldiers, on the introduction of every change, as a token of the decline of the military system. On this ground, then, the affinity of temporal military powers for spiritual theological powers is sufficiently accounted for. At the first glance we might suppose the converse relation to be less indispensable, since purely theocratic societies have existed, while an exclusively military one has never been known. But a closer examination will always show the necessity of the military system to consolidate, and yet more to extend, the theological authority, developed in this way by a continual political application, as the sacerdotal instinct has always been well aware. We shall see again that the theological spirit is as hostile to the expansion of industry as the military. Thus the two elements of the primitive political system have not only a radical affinity but also common antipathies and sympathies, as well as general interests; and it must be needless to enlarge further in this place on the sociological principle of the concurrence of these powers, which my historical analysis will present as constantly engaged in consolidating and correcting each other.

Affinity between the Positive and Industrial Spirit

The latest case of political dualism is even more unquestionable than the earliest, and we are favorably circumstanced for observing it, the two elements not having yet attained their definite ascendency, though their social development is sufficiently marked. When the time arrives for their political rivalry it may be more difficult than now to exhibit that resemblance in

origin and destination, and that conformity of principles and interests, which could not be seriously disputed as long as their common struggle against the old political system acts as a restraint upon their divergencies. The most remarkable feature that we have to contemplate in their case is the aid which each renders to the political triumph of the other, by seconding its own efforts against its chief antagonist. I have already noticed, in another connection, the secret incompatibility between the scientific spirit and the military. There is the same hostility between the industrial spirit, when sufficiently developed, and the theological. The most zealous advocates of the old *régime* are very far removed from the old religious point of view; but we can transport ourselves to it for a moment, and see how the voluntary modification of phenomena by the rules of human wisdom must thence appear as impious as the rational prevision of them, as both suppose invariable laws, finally irreconcilable with all arbitrary will. According to the rigorous though barbarous logic of the least civilized nations, all human intervention to improve the economy of nature is an injurious attack upon providential government. There is no doubt, in fact, that a strong preponderance of the religious spirit benumbs the industrial by the exaggerated feelings of a stupid optimism, as has been abundantly clear on many decisive occasions. That this disastrous effect has not been more fatal is owing to priestly sagacity, which has so managed this dangerous power as to educe its civilizing influence, while neutralizing its injurious action by constant and vigilant effort, in a way which I shall presently exhibit. We cannot, then, overlook the political influence by which the gradual expansion of human industry must aid the progressive ascendency of the scientific spirit in its antagonism to the religious, to say nothing of the daily stimulus which industry and science impart to each other, when once strong enough for mutual action. Thus far their office has chiefly been to substitute themselves for the ancient political powers which are yielding up their social influence, and our attention is necessarily drawn chiefly to the aid they have afforded to each other in this operation. But it is easy to perceive what force and what

efficacy must reside in their connection when it shall have assumed the organic character, in which it is at present deficient, and shall proceed to the final reorganization of modern society

Intermediate Régime

Now that we have examined the two extreme states, the intermediate dualism requires little notice. The interconnection of the convergent powers, spiritual and temporal, which constitutes the transitory *régime*, is a necessary consequence of all that we have been observing. Indeed, we need but look at the labors of metaphysicians and legists to see what their affinity is, amidst their rivalries, — an affinity which bases the philosophical ascendency of the one class on the political preponderance of the other. We may, then, regard as now complete the necessary explanation required by our fundamental law of human evolution, in order to its direct application to the study of this great phenomenon. That study will be guided by the consideration of the three dualisms which I have established as the only basis of sound historical philosophy. It is worth noticing the conformity of this law of succession, at once intellectual and material, social and political, with the historical order which popular reason has instinctively established, by distinguishing the ancient and the modern world, separated and reunited by the Middle Ages. The sociological law which I have propounded may be found to have for its destination to take up a vague empirical notion, hitherto barren, and render it rational and prolific. I hail this spontaneous coincidence as giving a sanction to my speculative labors; and I claim this confirmation in virtue of that great aphorism of positive philosophy which I have quoted so often, which enjoins upon all sound scientific theories to start from a point sufficiently accordant with the spontaneous indications of popular reason, of which true science is simply a special prolongation.

The series of views of social dynamics sketched out in this chapter has established the fundamental law of human development, and therefore the bases of historical philosophy. It only remains to apply this great sociological principle.

VI

A DEFINITION OF PROGRESS[1]

When we reach the plane which man occupies in the animal world, these laws of adaptation, selection, and survival, while they are not altogether superseded, and perhaps operate as powerfully as on the lower creatures, nevertheless become of comparatively small importance in consequence of the vastly more potent influences due to the development of the intellectual faculty which operates according to the indirect method. The progress which man has made, though from any absolute standard it may appear slow and even secular, is nevertheless, as compared to that which is brought about either by cosmical alterations in the environment or by the law of adaptation, or direct and indirect equilibration,[2] extremely rapid; as much more rapid than that which results from the biological laws just named as this is more rapid than that which results from the cosmical laws. This progress, too, is effected in spite of the frequent disastrous conflagrations which ignorance and error occasion by a perverse use of the Promethean fire.

Biological progress, which consists in increase of structure, must, as before shown, result in increase of pleasure. Anthropological progress, too, which is the result of the conscious pursuit of pleasure, must attain the object of pursuit.

It was shown in the preceding chapter that happiness is both the motive of every particular action and the ultimate end of all action. It follows that there can be no improvement of man's condition unless it tend to secure that end. Human progress may, therefore, be properly defined as that which secures the

[1] From Dynamic Sociology, by Lester F. Ward, Vol. II, pp. 173–177, New York, 1898. By permission of D. Appleton & Co.

[2] Spencer, Principles of Biology, Vol. I, chaps. xi and xii.

increase of human happiness. Unless it do this, no matter how great a civilization may be, it is not progressive. If a nation rise, and extend its sway over a vast territory, astonishing the world with its power, its culture, and its wealth, this alone does not constitute progress. It must first be shown that its people are happier than they would otherwise have been. If a people be seized with a rage for art, and, in obedience to their impulses or to national decrees, the wealth of that people be laid out in the cultivation of the fine arts, the employment of master artists, the decoration of temples, public and private buildings, and the embellishment of streets and grounds, no matter to what degree of perfection this purpose be carried out, it is not progress unless greater satisfaction be derived therefrom than was sacrificed in the deprivations which such a course must occasion. To be progressive in the true sense, it must work an increase in the sum total of human enjoyment. When we survey the history of civilization, we should keep this truth in view, and not allow ourselves to be dazzled by the splendor of pageantry, the glory of heraldry, or the beauty of art, literature, philosophy, or religion, but should assign to each its true place as measured by this standard.

In considering man's peculiar characteristic as a progressive being, and in how far he really is a progressive being in any other sense than all animals are progressive beings, it will not do to omit the important fact that it is only a part of the human race, and a comparatively small part, that contributes at all to this result. By far the larger part of the race, as it now exists, considered as nations and peoples, are making little or no intellectual progress, but are and have for ages been in a condition in this respect akin to that of animals; while in those nations where civilization is advancing, the great majority contribute absolutely nothing to its advancement, simply performing the functions of animals, viz., those of maintaining their own existence and perpetuating their kind; a very few, the mental and material investigators of things, originate every progressive institution. It is to these few only that all artificial progress in society is due.

It is claimed by some that, if we accept this definition of progress, viz., the increase of human happiness, it will follow that there has never been any progress at all. For they say that civilization, as it has existed among nations, has not had the effect to increase happiness, but rather to diminish it; that the happiest condition in which mankind can exist is that primitive, unconventional state which precedes all efforts at civilization, and allows nature to take its course; that the humblest peasant, dwelling in his Arcadian retreat, and ignorant of the vicissitudes of life amid the scenes of a high and giddy civilization, is more happy than the nervous pursuer of fortune, fame, or knowledge.[1]

It cannot be denied that civilization, by the many false practices which it has introduced, by the facilities which its very complexity affords to the concealment of crime, and by the monstrous systems of corruption which fashion, caste, and conventionality are enabled to shelter, is the direct means of rendering many individuals miserable in the extreme; but these are the necessary incidents to its struggles to advance under the dominion of natural forces alone.

It would involve a great fallacy to deduce from this the conclusion that civilization begets misery or reduces the happiness of mankind. Against this gross but popular mistake may be cited the principle before introduced, which is unanimously accepted by biologists, that an organism is perfect in proportion as its organs are numerous and varied. This is because the more organs there are the greater is the capacity for enjoyment. For this enjoyment is quantitative as well as qualitative, and the greater the number of faculties the greater is the possible enjoyment derivable from their normal exercise. To say that primitive man is happier than enlightened man, is equivalent to saying that an oyster or a polyp enjoys more than an eagle or an antelope.

[1] Jean Jacques Rousseau and other writers have maintained this view, and it is so strongly defended by one of the characters of Disraeli's Lothair as to justify a suspicion that it was the view of the author. Fénelon (Télémaque, Liv. VIII), in the account that Adoam gives of the inhabitants of Bætica, reflects the same sentiment with great force and clearness. See also Comte, Philosophie Positive, Vol. IV, pp. 60, 239.

This could be true only on the ground that the latter, in consequence of their sensitive organisms, suffer more than they enjoy; but if to be happy is to escape from all feeling, then it were better to be stones or clods, and destitute of conscious sensibility. If this be the happiness which men should seek, then is the Buddhist in the highest degree consistent when he prays for the promised *Nirvâna*, or annihilation. But this is not happiness — it is only the absence of it. For happiness can only be increased by increasing the capacity for feeling, or emotion, and, when this is increased, the capacity for suffering is likewise necessarily increased, and suffering must be endured unless sufficient sagacity accompanies it to prevent this consequence. And that is the truest progress which, while it indefinitely multiplies and increases the facilities for enjoyment, furnishes at the same time the most effective means of preventing discomfort, and, as nearly all suffering is occasioned by the violation of natural laws through ignorance of or error respecting those laws, therefore that is the truest progress which succeeds in overcoming ignorance and error.

Human progress is, therefore, perfectly analogous to that progress which is going on in the world of animal life, since both consist in a multiplication, variation, and refinement of the faculties of enjoyment, and any change in either which does not effect this is not progress. All happiness consists in the gratification of desire. Every faculty experiences a natural want to be exercised, and that want is a desire. The proper exercise of that faculty is the supply of that want and the gratification of that desire. There are two ways, therefore, by which the happiness of a being can be increased: first, by affording the opportunity for exercising existing faculties; and, second, by the creation of new and additional faculties, and extending these opportunities to the exercise of these also.

By the law of development alluded to, and which is a sort of biological law of supply and demand, the mere presence of these opportunities is all that is required to create the faculties themselves, for this renders the conditions for the existence of such faculties favorable; and, where the conditions are favorable for

the development of a faculty, that faculty will arise; when the opportunities for the exercise of a faculty cease, that faculty will itself cease to exist, although the organs through which it was exercised may long persist.[1]

This law extends with full force to the social condition of man. Whatever affords an opportunity for the exercise of a new human faculty creates such a faculty, creates a desire for its exercise, and actually gratifies that desire, thus adding to the sum of human happiness. The creation of such opportunities is, then, the origin of progressive action, and it is these same opportunities, increased and refined, that keep that desire in existence, and increase its intensity. Therefore, we may enunciate the principle that progress is in proportion to the opportunities or facilities for exercising the faculties and satisfying desire.

[1] Spencer, Data of Ethics, pp. 183–186 and 263 (§§ 67 and 102).

VII

THE EVOLUTION OF SOCIETY[1]

The prime factors in social progress are the Community and its Environment. The environment of a community comprises all the circumstances, adjacent or remote, to which the community may be in any way obliged to conform its actions. It comprises not only the climate of the country, its soil, its flora and fauna, its perpendicular elevation, its relation to mountain chains, the length of its coast line, the character of its scenery, and its geographical position with reference to other countries; but it includes also the ideas, feelings, customs, and observances of past times, so far as they are preserved by literature, traditions, or monuments, as well as foreign contemporary manners and opinions, so far as they are known and regarded by the community in question. Thus defined, the environment may be very limited or very extensive. The environment of an Eskimo tribe consists of the physical circumstances of Labrador, of adjoining tribes, of a few traders or travelers, and of the sum total of the traditions received from ancestral Eskimos. These make up the sum of the conditions affecting the social existence of the Eskimos. The environment of the United States, on the other hand, while it comprises the physical conditions of the North American continent, comprises also all contemporary nations with whom we have intercourse, and all the organized tradition — political and ethical, scientific and religious — which we possess in common with all the other communities whose civilization originated in the Roman Empire. The significance of this increase of size and diversity in the environment will be explained presently.

[1] From Outlines of Cosmic Philosophy, by John Fiske, Part II, chap. xviii, pp. 197–201 (copyright, 1874, by John Fiske. Copyright, 1902, by Abby M. Fiske, executrix). By permission of Houghton, Mifflin & Co.

Bearing in mind this definition of a social environment, which I believe carries with it its own justification, let us briefly notice the error committed by those writers who would fain interpret all the most important social phenomena as due, solely or chiefly, to physical causes. This is an error frequently committed by physiologists who try their hand at the investigation of social affairs, and who attempt to treat sociology as if it were a mere branch of biology. But this is not the case. As we have seen psychology to be an offshoot from biology, specialized by the introduction of inquiries concerning the relations of the percipient mind to its environment, we must similarly regard sociology as an offshoot from psychology, specialized by the introduction of inquiries concerning the relations of many percipient and emotionally incited minds to each other and to their common environment. As in biogeny, all attempts to discover the law of organic development failed utterly so long as the relations of the organism to physical environing agencies were alone studied, and succeeded only when Mr. Darwin took into account the relations of organisms to each other; so still more inevitably in sociogeny must all our efforts fail so long as we consider merely the physiologic relations of a community to the country in which it dwells, and refuse to recognize the extent to which communities influence each other by means that are purely intellectual or moral. Doubtless the character of the physical environment is of importance, more especially, perhaps, in the earlier stages of civilization. No doubt civilization will first arise, other things equal, in a locality where food and shelter can be obtained with a medium amount of exertion; where nature is neither too niggard nor too lavish in the bestowal of her favors. No doubt there is a physical significance in the fact that civilization began, not in barren Siberia, or in luxuriant Brazil, but in countries like Egypt and Mesopotamia, which were neither so barren as to starve, nor so luxuriant as to spoil, the laborer. No doubt the Greeks owed much to the extent of their coast line. No doubt — above all — the Mediterranean is justly sacred to the student of history as partly the civilizer of the peoples who upon its waves first courted adventure, and conducted commerce, and imparted

to each other cosmopolitan sympathies which could never have been evoked but for some such intercourse. All this may be granted. But as civilization advances, the organized experience of past generations becomes to a greater and greater extent the all-important factor of progress. As Comte expresses it, in one of his profoundest aphorisms, the empire of the dead over the living increases from age to age. If we contemplate, from a lofty historical point of view, the relative importance of the factors in the environment of our United States, I believe we shall be forced to conclude that the victory of the Greeks at Marathon, the conquest of Gaul by Cæsar, the founding of Christianity, the defeat of Attila at Châlons and of the Arabs at Tours, the advent of the Normans in England, the ecclesiastic reforms of Hildebrand, the Crusades, the revolt of Luther, the overthrow of the Spanish Armada, and the achievements of scientific inquirers from Archimedes to Faraday have influenced and are influencing our social condition to a far greater extent than the direction of the Rocky Mountains, or the position of the Great Lakes, or the course of the Gulf Stream. Or if we inquire why the Spaniards are still so superstitious and bigoted, I believe we shall find little enlightenment in the fact that Spain is peculiarly subject to earthquakes, but much enlightenment in the fact that for eight centuries Spain was the arena of a life-and-death struggle between orthodox Christians and Moorish unbelievers.

The environment in our problem must, therefore, not only include psychical as well as physical factors, but the former are immeasurably the more important factors, and as civilization advances their relative importance steadily increases. Bearing in mind these preliminary explanations, let us now address ourselves to the problem of social evolution, applying to the solution of it sundry biological principles established in previous chapters. We have first to observe that it is a corollary from the law of use and disuse, and the kindred biologic laws which sum up the processes of direct and indirect equilibration, that the fundamental characteristic of social progress is *the continuous weakening of selfishness and the continuous strengthening of sympathy*. Or — to use a more convenient and somewhat

more accurate expression suggested by Comte — it is a gradual supplanting of *egoism* by *altruism*. . . .

[1] In the first place, the evolution of society, no less than the evolution of life, conforms to that universal law of evolution discovered by Mr. Spencer, and illustrated at length in earlier chapters. The brief survey just taken shows us that social progress consists primarily in the integration of small and simple communities into larger communities that are of higher and higher orders of composition, and in the more and more complete subordination of the psychical forces which tend to maintain isolation to the psychical forces which tend to maintain aggregation. In these respects the prime features of social progress are the prime features of evolution in general.

In the second place, the progress of society exhibits those secondary features of differentiation and integration which evolution universally exhibits. The advance from indefinite homogeneity to definite heterogeneity in structure and function is a leading characteristic of social progress. On considering primitive societies we find them affected by no causes of heterogeneity except those resulting from the establishment of the various family relationships. As Sir Henry Maine has shown, in early times the family and not the individual was the social unit. In the absence of anything like national or even civic organization, each family chief was a monarch in miniature, uniting in his own person the functions of king, priest, judge, and parliament; yet he was scarcely less a digger and hewer than his subject children, wives, and brethren. Commercially, it is needless to say, all primitive communities are homogeneous. In any barbarous tribe the number of different employments is very limited, and such as there are may be undertaken indiscriminately by every one. Every man is his own butcher and baker, his own tailor and carpenter, his own smith, and his own weapon maker. Now the progress of such a society toward a civilized condition begins with the differentiation and integration of productive occupations. That each specialization of labor entails increased efficiency of

[1] From Outlines of Cosmic Philosophy, pp. 209–211.

production, which reacting brings out still greater specialization, is known to every tyro in political economy Nor is it less obvious that, with the advance of civilization, labor has been steadily increasing in coherent heterogeneity, not only with regard to its division among different sets of mutually dependent laborers but also with regard to its processes and even its instruments. The distinguishing characteristic of modern machinery, as compared with the rude tools of the Middle Ages or the clumsy apparatus of the ancients, is its definite heterogeneity. The contrast between the steam engine of to-day and the pulleys, screws, and levers of a thousand years ago assures us that the growing complexity of the objects which labor aims at is paralleled by the growing complexity of the modes of attaining them. Turning to government, we see that by differentiation in the primeval community some families acquired supreme power, while others sank, though in different degrees, to the rank of subjects. The integration of allied families into tribes, and of adjacent tribes into nations, as well as that kind of integration exhibited at a later date in the closely knit diplomatic interrelations of different countries, are marked steps in social progress. Next may be mentioned the differentiation of the governing power into the civil and the ecclesiastical, while by the side of these ceremonial government grows up insensibly as a third power, regulating the minor details of social intercourse none the less potently because not embodied in statutes and edicts. Comparing the priests and augurs of antiquity with the dignitaries of the mediæval Church, the much greater heterogeneity of the latter system becomes manifest. Civil government likewise has become differentiated into executive, legislative, and judicial. Executive government has been divided into many branches, and diversely in different nations. A comparison of the Athenian popular government with the representative systems of the present day shows that the legislative function has no more than any of the others preserved its original homogeneity; while the contrast between the *Aula Regis* of the Norman kings and the courts of common law, equity, and admiralty, — county courts, queen's courts, state courts, and federal courts, — which are

lineally descended from it, tells us the same story concerning the judicial power. Nor should it be forgotten that the steady expansion of legal systems, to meet the exigencies which civilization renders daily more complex, is an advance from relatively indefinite homogeneity to relatively definite heterogeneity. . . .

[1] Now the historic survey into which we were led a moment ago, while inquiring into the progress of moral feelings, showed us that, in this respect also, the evolution of society agrees with the evolution of life in general. The progress of a community, as of an organism, is a process of *adaptation*, — a continuous establishment of inner relations in conformity to outer relations. If we contemplate material civilization under its widest aspect, we discover its legitimate aim to be the attainment and maintenance of an equilibrium between the wants of men and the outward means of satisfying them. And while approaching this goal society is ever acquiring in its economic structure both greater heterogeneity and greater specialization. It is not only that agriculture, manufactures, commerce, legislation, the acts of the ruler, the judge, and the physician, have since ancient times grown immeasurably multiform, both in their processes and in their appliances ; but it is also that this specialization has resulted in the greatly increased ability of society to adapt itself to the emergencies by which it is ever beset. The history of scientific progress is in like manner the history of an advance from a less complete toward a more complete correspondence between the order of our conceptions and the order of phenomena. Truth — the end of all honest and successful research — is attained when subjective relations are adjusted to objective relations. And what is the consummation of moral progress but the thorough adaptation of the desires of each individual to the requirements arising from the coexistent desires of all neighboring individuals? Thus the phenomena of social and of organic progress are seen to correspond to a degree not contemplated by those thinkers who, from Plato to Hobbes, have instituted a comparison between them. The dominant characteristics of all life are those in which social and individual life agree.

[1] Outlines of Cosmic Philosophy, pp. 212–213.

VIII

THE TRANSITION FROM A PAIN ECONOMY TO A PLEASURE ECONOMY[1]

Before proceeding further in the discussion of the social forces the distinction between a pain and a pleasure economy must again be emphasized. Beings in a pain economy have vigorous motor powers but a low development of the sensory powers. As they pass from one environment to another the requisites for survival are determined by the enemies and pains to be avoided. Food and pleasure are of course necessary, but they are not the main objects of conscious thought. When such beings have developed their sensory powers far enough so that forms of thought and ideals are created which aid them in their activities, there is formed for them a pain society, the end of which is protection from enemies. There is a pain morality, the purpose of which is to keep persons from committing acts and putting themselves in situations which lead to destruction. There is also a pain religion, the purpose of which is to invoke the aid of higher beings in the ever-recurring contests with enemies and pain.

In describing the leading features of a pain economy, I do not mean to imply that men in such an economy are constantly thinking of pain and never of pleasure, but that all their institutions have as their basis the fear of enemies and pain. The primitive state is formed, as Hobbes tells us, to secure protection from enemies. The primitive morality is some form of asceticism. When enemies abound the conscious pursuit of pleasure exposes a being to the attacks of these enemies and the consequent evils. The choosing of smaller instead of greater pleasures and the postponement of pleasures until the ends demanded for

[1] From The Theory of Social Forces, by Simon N. Patten, chap. iv (copyright, 1896, by American Academy of Political and Social Science, Philadelphia).

protection and security are obtained become the best means of prolonging existence. By the aid of these social forces in a pain economy many of the highest ideals of men have been formed. Connected with these ideals is a series of impulses which prompts individuals to activities in harmony with the conditions under which they have grown up. The most fundamental characteristics of the human race belong in this realm, and to the average individual they seem to be the only bulwarks by which society, morality, and religion can be defended. Yet we are now in the transition stage from this pain economy to a pleasure economy, and it is necessary to see what changes will ensue and in what way ideals, forms of thought, and impulses must be modified to meet the new conditions.

The causes of a pain economy lie in the environment. Vigorous enemies deal out death and destruction so freely that the thought of isolated individuals is concentrated on the causes and remedies for pain. The development of human society has gradually eliminated from the environment the sources of pain. The civilized world has been freed from dangerous beasts and reptiles, and the growth of large nations has cut off the danger of invasion by barbarous and warlike human foes. The objective environment is now merely the crust of the earth and its stock of materials and goods. The sensory powers have free play in analyzing this material into its elements, and in reorganizing these elements into valuable goods. These changes make a pleasure economy possible and destroy the conditions which made the subjective environment of the old pain economy a necessity.

It is not, however, to be assumed that the transition to a pleasure economy is an easy one. On the contrary, it is a most difficult process and one fraught with many evils and dangers. So many of the fundamental ideas, ideals, and impulses of the race lose their efficiency through the change that mankind seems almost without a rudder to guide it through its new difficulties. Historical evidence would seem to prove that a pure pleasure economy is an impossibility. Nation after nation has gone down when utilities instead of pains have become the supreme object of interest. Individuals as well as nations show the deteriorating

influence of pleasure as soon as they are freed from the restraints of a pain economy. This tendency to deterioration, however, is an evil that belongs only to the period of transition. A nation, after undergoing the severe discipline of an unfavorable environment, suddenly finds itself transferred to a new environment where there is an abundance of utilities and no fear of enemies. The old safeguards to character are now inadequate, and it takes a long time to construct a new series of safeguards suited to the new conditions. In the meanwhile individuals sink into a state of lethargy or of vice, and the nation is so weakened that some new people, coming from a region where a pain economy still prevails, find it an easy conquest.

Consequently in those regions where a pleasure economy is possible nation after nation has risen and fallen, without ever developing sufficient strength to resist the encroachments of enemies disciplined by a pain economy. A pleasure economy cannot be formed by any kind of a revolutionary process. There must be a long period of transition in which the leading elements of the old economy are gradually lost, and in their places the ideas, ideals, and impulses of a pleasure economy are substituted. The development of modern nations has been along this path. Without a conscious departure from the old ideals of state, morality, and religion, there has been a gradual substitution of certain ideals and impulses of a pleasure economy, until now all of our leading concepts are held in a dual form. One group of ideals and impulses is the conservator of past conditions, while blended with them is another group of ideals and impulses which is the outcome of the new conditions. Such a state of affairs cannot but be the cause of much confusion and distress. The only hope of progress lies in separating the present aggregate of forces into their elements and in finding to which group each ideal and impulse really belongs.

The present situation can, perhaps, be better described by returning to an elementary distinction. It has been shown that progress is due to the passing from one environment to another, each having certain requisites for survival. The purpose of individuals in passing from environment to environment is not

progress, but an escape from competition. The easiest way out of present difficulties is taken even though some other path in the long run would better serve the ends of the race. The line of least resistance often forces progress to take a circuitous route, as when a river cutting its way to the sea often makes long curves to traverse a short distance because of some obstacle in the direct route.

When the race entered a pain economy it was forced out of the direct line of social progress into a series of environments where the requisites for survival warded off pain instead of promoting welfare. The early instincts, customs, ideals, and religious forms of the race were at bottom safeguards from enemies and pains. In time, however, the conditions of a pain economy became less severe and some of the requisites for survival came from a pleasure economy. The line of progress then tended to come back to its normal trend, and now after a long detour the race finds itself at a point on the normal line somewhat in advance of the point of departure. The environment no longer demands a pain economy, yet the instincts, habits, and ideals of the race have been acquired during this long period of abnormal progress, and there are no proper guides for activity in the new pleasure economy into which the race is admitted.

To put itself into a normal condition, the race must construct an artificial channel from the point where it left the normal line of progress to the point where it now is. It must create with design the same impulses, habits, and ideals which it would have had if the normal line of progress had not been abandoned. The abnormal impulses and ideals of the pain economy must be discarded or reconstructed on a new basis. This necessity involves an enormous undertaking, for the abnormal course of events reaches back far beyond the organization of men into societies.

It is often assumed that this reorganization is an easy one to beings who have the faculty of reason to guide them. If reason were that independent source of authority which many metaphysicians hold it to be, something might be hoped for from it. But reason acts only on the impulses that lie back of it, and they are the slow accumulations of many ages. Doubtless a conscious

progress can save the race from many evils and economize much time, but it cannot alter the order of development nor eliminate any of its steps. Nations cannot become fitted for the conditions of a pleasure economy without passing through a stage of progress where the elementary ideas and impulses are adjusted to one another by the crudest form of evolution. We are repeating this early process at present with a great loss of life and happiness. Individuals brought suddenly into a pleasure economy fail to react against their environment, yield to temptation, and sink into vice. The new impulses and ideals appear but slowly, yet perhaps we are far enough along to see something of their character and influence. As I have said, they are already a part of our present stock of ideas. The new, however, is so blended with the old that it is hard to isolate them. Perhaps our religious ideals show the effect of the transition from a pain to a pleasure economy more plainly than any others. The concept of God possessed by primitive races is but little separated from their concept of earthly rulers. They serve him as they serve their rulers, from fear of the consequences of disobedience. It is a rule of fear tempered with a hope of protection from enemies. With a clearer perception of spatial relations their concept of God removes him farther from the sphere of earthly rulers, but he is still thought of as a God of war and an avenger of evil deeds. When the development of the sensory powers has progressed far enough to create a concept of natural law and of the universe, God is thought of as the creator of men and is supposed to use his power and foresight to ward off the evils which come from natural forces. When men advance far enough to see that a natural retribution does not follow evil deeds in this life, God becomes the final judge of the deeds of men. So far there has been a development of the ideas of a pain economy due to changes in the sensory powers of men. Force, power, and omniscience are the leading characteristics of the ideal of God.

At length, however, a new thought appears in the form of the Christ ideal. Christ is not the God of war and hate, but the God of peace and love. He comes not as the ruler of men but as their servant. He has so little power that a corporal's guard can

crucify him. With the appearance of Christ there was brought into the world a new group of religious ideas quite foreign to those previously entertained. The old ideals were fitted for men whose foes were external and from which they needed a protector. A God of power who was an avenger of evil deeds was a fitting ideal for men in such a condition. But when men are transferred to a pleasure world their evils are internal. They are their own foes. They want relief not from persecution but from temptation. The concepts of a powerful God and of a future retribution are of little help to men in such a situation. They want rather a model for imitation, one who remains pure even though subject to the passions and temptations of men. The likeness to man is emphasized in the Christ ideal more than the likeness to God. He is a better ideal because he is powerless and helpless.

IX

WAR AND ECONOMICS IN HISTORY AND IN THEORY[1]

Each generation must write its own history of past events, in order to interpret them in terms corresponding to its needs. New conditions give rise to new problems, and these to new conceptions; and when we turn again to examine the past, we put to it questions never before asked. Since the middle of the century, when the victory of parliamentary government in western Europe was finally assured, — without, however, accomplishing the marvelous results expected of it, — the question as to the best form of government has come to have mainly an academic interest, while the contests of actual politics have more and more turned upon questions of social and economic policy. This shifting of the center of interest has been followed by a corresponding change in the character of historical writing, culminating in the rise of the new school[2] in which political constitutions are considered as results rather than causes, and attention is devoted chiefly to the economic factor in history. Such a change in the point of view must necessarily alter the perspective of history, giving more prominence to such phenomena as have an important bearing on economic development.

That war belongs to this category seems altogether beyond dispute. If it be true that all great events are due in large part to economic causes, and react in turn upon economic conditions,

[1] Edward VanDyke Robinson, *Political Science Quarterly*, Vol. XV, pp. 581–622.

[2] Represented in different ways by men so unlike, yet having so much in common, as Schmoller, Lamprecht, Ashley, Bücher, Loria, and Rabbeno. Cf. Lamprecht's Alte und neue Richtungen in der Geschichtswissenschaft, and the admirable review entitled "Features of the New History," by Earle Wilbur Dow, in the *American Historical Review* for April, 1898.

then surely it will no longer suffice to dismiss this subject with the customary lamentations about the horrors and waste of war, nor even with some more or less probable estimates of the cost of particular wars. The time has certainly come when an investigation is needed, to show, if possible, the relation of war as an institution to the economic conditions prevailing in the several stages of civilization.

I

Among tribes subsisting on the products furnished spontaneously by nature, war is the normal condition. The reason is, in the main, economic. The scarcity and precariousness of the food supply render much land necessary to support each family. Unless climatic conditions absolutely prevent an increase of population, the hunting grounds of the several tribes are of necessity extended until they overlap; and so arises a war of extermination, whose issue is the destruction of the least efficient social organization and the restoration of the equilibrium between population and food supply. At this stage of economic development war is not only a business enterprise but the only conceivable business enterprise, — the only means by which a vigorous tribe may procure for itself an increased food supply. Nevertheless, a victorious tribe cannot expand without breaking up into smaller tribes, for the economic condition forbids men to dwell in large groups. This state of things thus tends to perpetuate itself. Individual tribes may rise or fall, but the old way of life goes on unchanged. How, then, does civilization ever emerge from this vicious circle?

This is a question not yet satisfactorily answered, though M. Tarde's imitation theory, and the culture myths of all races which have learned the secret of an artificial food supply, would indicate that individual initiative played a leading part in the great transformation. But the most brilliant genius could do no more than apply to the satisfaction of an existing need something contained in or suggested by his environment. And it is characteristic of human nature not to try a new plan until the old one has utterly failed. What, then, were the circumstances which resulted in the creation of an artificial food supply?

It is evident that before this could happen the natural food supply must have proved insufficient, and the usual remedy in such cases, war, must have failed to bring relief. At first glance both these conditions would appear to exist among tribes worsted in battle, and one is tempted to think he has discovered another of the uses of adversity. But in savage warfare the defeated party is seldom left with any surplus population; and, even when their numbers again increase or the tribe is forced back into a less productive country, the creation of an artificial food supply is effectually hindered by their inability to defend themselves or their possessions. Instead of seeking to increase their resources, they set about limiting the increase of population by a systematic extension of the practices of infanticide and "senicide," which exist among all savages but reach their fullest development among tribes unable to make head against their neighbors. It is not, therefore, among the conquered that the origin of the new industrial system must be sought; nor yet among the conquerors, if they have been able by conquest adequately to supply their needs. It is rather among tribes whose equality of strength or inaccessible location prevents a decisive victory that the creation of an artificial food supply becomes a necessity and hence a fact; and the same rule holds good concerning most of the subsequent steps in economic progress. In other words, industrial development is the result of strenuous competition, of which war is the most acute form.

Whether the next stage shall be pastoral or agricultural depends on the environment. In an open country, where there are animals suitable for domestication, the tribe will become pastoral; without such animals, or in a broken forest land, it becomes agricultural. Other things being equal, the change to pastoral life is the more easy and natural. The food supply obtainable from a given area being greatly increased, the population is multiplied in like proportion. And whereas the hunting existence scatters the population, the pastoral life tends to greater concentration through the need of mutual protection for the herds, and to social and political consolidation through the development of a patriarchal organization. For this reason, while

hunting tribes are limited to guerrilla warfare, the numbers, discipline, mobility, and readily transported food supply of pastoral peoples enable them to undertake distant expeditions and to make conquests on a grand scale. These things are, moreover, forced upon them by the economic limitations inherent in their mode of life. War is eventually as much an economic necessity for pastoral as for hunting tribes. Population depends upon herds, and herds upon accessible pasturage. But, owing to the rapid increase of population due to the greater regularity and comfort of their life as compared with hunting tribes, the limit of safety is soon passed. In this condition the least failure of pasturage, from drought or other cause, drives them forth into distant lands with the suddenness and violence of a tidal wave. This is the explanation of the periodically recurring *Völkerwanderungen* which have swept over the earth, destroying and founding empires.

When hemmed in by impassable barriers or invincible enemies, pastoral tribes, under the pressure of an increasing population, slowly become agricultural. The latter case was illustrated in the Germans beyond the Roman lines; of the former, examples may be found in Egypt, Chaldea, China, Peru, and Mexico, which early became centers of agriculture less because of their natural fertility — since in most of them irrigation was necessary — than because of their inaccessibility. They were so fenced about by mountains and deserts that the inhabitants were thrown back on their own resources to maintain the increasing population. Moreover, for the same reason, they were largely protected against hostile raids during the early period of agricultural development, when the people, scattered upon the land, fall an easy prey to every marauder.

Inaccessibility would thus appear to be as advantageous for the origin of a civilization based on agriculture as accessibility is for its continued development. Nevertheless, even in the most sheltered lands, the necessity of self-defense finally leads to division of labor and to social differentiation. A temporary form of this division was the arrangement found among the Suevi, by which the men alternately tilled the land and went out to war.

The next step is the development of a permanent military class. The system of castes is an economic necessity at the stage of development when the family is the only possible school of practical arts. It is equally "an inevitable incident accompanying a certain stage of military expansion." And it is likewise the result of conquest which produces slaves and subjects to be exploited for the benefit of the ruling race, — a result whereof Sparta is the classical example. All three causes were operative in antiquity, especially in the Oriental world. The great empires which flourished there all rested on a more or less clearly defined system of castes; and in all of them conquest was not only the origin but also the chief end of the state. Under the circumstances no other object was possible; for the lack of scientific knowledge and the rigidity of the social system narrowly limited the division of labor and rendered not only agriculture but even manufacturing relatively unproductive. It was inevitable, therefore, that the natural increase of population should cause the law of decreasing returns to be keenly felt. Where should relief be sought if not in conquest, — in the booty and tribute of subject peoples? To this all nations instinctively turned.

It is not less true, therefore, of agricultural than of shepherd nations, that war ultimately becomes an economic necessity. For the time comes when foreign lands must be drawn upon to feed the people, and, in the absence of international division of labor, the only possible means to this end is war. The development of commerce on a grand scale and the use of a money economy do not remove all the causes tending to war; but they open up the possibility — barring commercial rivalries — of a peaceful expansion. And this was neither possible nor conceivable in a natural economy such as characterized the Orient. This fact alone explains the predominant rôle of conquest in the ancient world.[1]

II

In passing from the Oriental nations to Greece we obtain a glimpse into a condition of things infinitely more primitive.

[1] Cunningham, Western Civilization in its Economic Aspects, pp. 13, 14, 24–38.

Here we find in its beginnings the economic, social, and political development which in Asia and Africa had reached maturity when history opens. The Greek states reproduce in miniature before our very eyes the process of development and decay which underlay the great movements of ancient history. For this reason they reveal with the greatest clearness the fundamental relations of industry and war.

The early Greeks, like the Ætolians of a later day, were a rude race — half pastoral, half agricultural, and still partially nomadic — who waged war ceaselessly for herds, slaves, and fertile lands. War was for them strictly a business enterprise; or, as Goethe puts it:

> Krieg, Handel und Piraterei
> Dreieinig sind sie, nicht zu trennen.

War existed, as it were, by nature; while peace required to be established by special treaty. This is seen in the *ἀσυλία*, — that is, exemption from spoliation, — which was granted only as a special favor. It is seen even more strikingly in the fact that in Homer piracy is a distinctly honorable calling, — the only one, in fact, which a thorough gentleman may follow. The wrath of Achilles grows out of a question of booty. Agamemnon constantly prays that he may "plunder the well-built city of Priam." And the Trojan war as a whole is evidently a piratical expedition of Greek vikings. Moreover, through all the changes of advancing civilization, war, and even private war, continued in the eyes of the people to constitute an honorable mode of acquisition. Innumerable phrases and proverbs scattered through Greek literature show that war was conceived not only as the natural condition between all men but also as the source of wealth and honor, and even as the creative principle in the universe.[1]

These facts, which usually furnish the text of a sermon on Greek morality, are, in a broad sense, as much facts of nature,

[1] Iliad, III, 69–74. Od., IX, 39–42; XIV, 210–234, 258–272. Hymn to Apollo, 452 *et seq.* Thucy., I, 1–21; V, 105. Pindar, Frag. 151. Plato, Laws, 625, 626. Especially striking is the fragment of Herakleitos: *πόλεμος πάντων μὲν πατήρ ἐστι, πάντων δὲ βασιλεύς, καὶ τοὺς μὲν θεοὺς ἔδειξε, τοὺς δὲ ἀνθρώπους, τοὺς μὲν δούλους ἐποίησε, τοὺς δὲ ἐλευθέρους* (Apud Mullachium, Frag. phil. graec., I, 320). Cf. Arist., Eth. Nicom., VIII, 2. Plut. de Isid. et Osir., cap. 48.

and as little suited to be the subject of ethical judgment, as a tornado or an earthquake. The task of science is to understand, not to judge. And it is precisely such facts as these which furnish the indispensable clew. Greek history is "simple and complete," because it is dominated almost exclusively by a single cause. The Greek states, in their brilliance, their turbulence, and their swift decay, reveal with surprising clearness the characteristics of limited political areas, in which the question of land or space is necessarily fundamental. From the beginning to the end of their history every important economic, military, and political movement originated in the effort to find support for a redundant population. The Dorian conquest was the work of a poor and hardy tribe whose native mountains no longer afforded it sustenance, and which therefore went forth to seek with the sword its fortune in distant lands. The Greek colonies arose from the same motives, partly through plundering raids which ended, like those of the Northmen, in conquest and settlement, partly through peaceful emigration. The later wars, both foreign and domestic, were due to the same cause, namely, the struggle for land and food. Even the growth of commerce and the introduction of a money economy, while altering the superficial aspects of the struggle, did not remove, but rather intensified, this incessant and deadly competition. It divided Greece into two parties, — the one continental, agricultural, military, which clung to the natural economy and followed the lead of Sparta; the other maritime, commercial, naval, which speedily adopted a money economy and fell largely under the control of Athens after her transformation from a continental to a maritime state. That Sparta remained aristocratic, while Athens became democratic, was a result rather than a cause. The contrast and the hostility between the two states and the interests which they represented lay deeper than forms of government; it was rooted in their very mode of life. It was the irrepressible conflict between a natural and a money economy, — the old struggle for existence in a new form. The abiding hostility of the subject cities toward Athens, and of the social parties at Athens toward each other, bears witness to the same irreconcilable conflict of interests.

Confronted with the necessity of feeding a population greatly in excess of her resources, the Imperial City bent every energy to procure from abroad what nature had denied at home, not only by extending her export trade but also and chiefly by exploiting to the utmost her political position and her command of the sea.[1]

The wars of the Hellenistic period were due to the same cause. When the gold and arms of Philip had imposed peace on the warring cities of Greece, he planned the Asiatic campaign primarily in order to provide for the landless men who swarmed in the Greek cities, a constant incitement to piracy and civil war.[2] For the keen-eyed Greeks with Xenophon had long since made it known to their countrymen that since the Persian empire was so rich and so weak, it was their own fault if they preferred to abide at home in poverty rather than be masters of the Persian wealth. What Xenophon had conceived and Philip had planned, Alexander executed. In his train the Greeks swarmed forth like bees in springtime. Greek cities sprang up on every side as if by magic. Greek merchants, administrators, soldiers, filled the land, carrying their tongue and civilization into the wastes of central Asia and to the very gates of India, acquiring in turn from the fertile East the wealth which their narrow and rocky fatherland denied them. This stream of Greek emigration flowed on unchecked for centuries. The peace which followed at home was due less to the Macedonian control than to the fact that this enormous expansion and emigration had largely dried up the perennial fountain of contention and of war.

Events so important and dramatic could not fail to make a deep impression on a people so open-minded and thoughtful as the Greeks. They were the first explicitly to recognize and state the problem of war, and to make it the subject of scientific investigation. The course of events thus receives additional illustration and interpretation through the development of doctrine.

Among the thinkers whose contributions to the theory of war call for individual mention, the earliest, and in some respects the most remarkable, is Hesiod. His voice was the first to be lifted

[1] Meyer, Die wirtschaftliche Entwickelung des Alterthums, pp. 39, 41.
[2] Isocrates, V, 120.

in protest against the current glorification of war. Himself a peasant, he undoubtedly expressed the views of his class, who suffered most of the losses of war while others reaped its rewards. Almost alone among ancient writers, he sings of labor. In words that have a strangely modern ring he contrasts the fruitful emulation of industry with the destructive rivalry of war. All that the school of Cobden has written on the subject is but an elaboration, often a tedious iteration, of the views here expressed or necessarily implied.[1]

The next author to discuss war from the economic standpoint was Thucydides. It would be no exaggeration to call his work "the economic interpretation of Greek history." He shows in detail how the Peloponnesian war resulted from the pressure of an imperious necessity, namely, a large population and poor soil, which rendered Athens as unscrupulous in time of peace as other states were wont to be in war. Hence the continual confiscations at home; hence also the exploitation of their allies and the repeated massacres to make room for Athenian colonists.[2]

Essentially the same point of view prevails in the early writings of Xenophon.[3] In conformity with this opinion he points out the complete dependence of Athenian power and prosperity upon the control of the sea, whereby the island states were delivered helpless into her hands, the continental states were constrained to obey out of regard for their commerce,[4] and the choicest products of all lands were diverted from those who refused to do her bidding and carried to Athens, which thus lived by the toil of others.[5] But the long series of wars that brought ruin upon all Greece moved Xenophon, in his last work, to seek some escape from the policy of aggression, considering that "if it were possible for the citizens of Athens to be supported solely from the soil of Attica itself, . . . herein lay . . . the antidote to their own poverty and to the feeling of suspicion with which they are regarded by the rest of Hellas."[6] After

[1] Works and Days, II, 11–26.
[2] Thucyd., I, 15, 70; II, 13, 38; III, 82; V, 116.
[3] *E.g.* Oecon., I, 15.
[4] Government of Athens, II, 1–3.
[5] *Ibid.*, II, 7, 8, 11. Thucyd., I, 119.
[6] Revenues of Athens, chap. 1.

dwelling upon the sources of profit not yet fully utilized, especially mines and commerce,[1] he shows that peace is an indispensable condition for the full enjoyment of these natural advantages, and calls to mind that Athens was twice installed as chief of the naval confederacy for services to Hellas, and twice overthrown for selfishly misusing her power. And then he adds:

> Of all states Athens is preëminently adapted by nature to flourish and wax strong in peace. And while she abides in peace she cannot fail to exercise an attractive force upon all. . . . Again, is any one persuaded that, looking to riches and money making, the state may find war more profitable than peace? . . . Even at the present time we are suffering from its ill effects.[2]

In this passage the war economy of the ancient world is tried at the bar of reason and experience, and explicitly condemned on economic grounds.

Very similar conclusions are found in Plato, notwithstanding the fact that he is concerned to know, not whether war or peace is the more profitable, but which is the more favorable to the true life, the attainment of virtue. Regarding the soul, and all pertaining thereto, as infinitely superior to the body, he naturally determines the worth of all things by their relation to these parts of men. By this criterion, accordingly, he measures war. In the Republic he shows in detail how war arises inevitably from the increase of population and the consequent competition of neighboring states for land.[3] From this it follows that, considered as an occupation, war, as also trade and hunting, is

> unproductive or acquisitive — since none of these produces anything, but is only engaged in conquering, by word or deed, or in preventing others from conquering, things which exist and have been already produced.[4]

This analysis of war leads inevitably to its rejection as the end of state activity. For this reason, in spite of the fact that his

[1] Revenues of Athens, chaps. 2, 3. Memor., II, 7.
[2] Revenues, chap. 5.
[3] Rep., II, 372, 373; VIII, 547, 548. Phædo, 66.
[4] Sophist, secs. 219, 222. Laws, sec. 823.

own ideal state is modeled on the Dorian institutions of Sparta and Crete, Plato severely condemns these states for their devotion to war, — a condemnation which must have astonished his contemporaries, who saw in these states the fullest realization of the universal ideal, not less than it does the Spartan and Cretan interlocutors in the dialogue. His conclusion is that

> war, whether external or civil, is not the best, and the need of either is to be deprecated, but peace with one another and good will are best. . . . No one can be a true statesman, whether he aims at the happiness of the individual or the state, who looks only or first of all to external welfare; nor will he ever be a sound legislator who orders peace for the sake of war, and not war for the sake of peace.[1]

Nevertheless, idealist though he is, and filled with a fine scorn of the military virtues, Plato does not dream of abolishing war. On the contrary, he clearly perceives that the least aggressive of states would still need protection, and he recognizes a decay of the military spirit as a symptom and cause of national decadence.[2]

Aristotle reaffirms in the main, and further develops, the doctrines of Plato. His criterion is the same, namely, the true life, the attainment of virtue. In the spirit of Plato's distinction between Greek and barbarian he justifies slavery, and also war for the acquisition of slaves, on the ground that "animate instruments are quite as necessary as inanimate," and that barbarians are intended by nature for slavery. Such a war he classes as a species of hunting, which is itself a part of the art of acquisition (*κτητικὴ*). But while thus classifying and justifying war as a mode of acquisition, Aristotle emphasizes, even more than Plato, that it is only a means to an end, and that to sacrifice the end to the means, as is done in states organized solely for war, is the height of absurdity. And he closes his condemnation of the prevalent war economy with words whose profound wisdom the world has been slow to fathom.

> Facts as well as arguments prove that the legislator should direct all his military and other measures to the provision of leisure and the

[1] Laws, I, 625, 626, 628, 630, 638; VII, 803, 829; VIII, 829.
[2] Statesman, 307. Rep., V, 470; VIII, 547, 548, 551.

establishment of peace. For most of the military states are safe only while they are at war, but fall when they have acquired their empire. . . . First of all, men should provide against their own enslavement, and, in the second place, obtain empire for the good of the governed.[1]

It was only yesterday that Mr. Kidd interpreted to an astonished world, still under the spell of Cobden, what this last clause really means. But unfortunately, owing to Aristotle's prepossessions in favor of the primitive or "natural" mode of life and his prejudices against the division of labor and a money economy (*χρηματιστική*), which he considers "contrary to nature," he is led to condemn those industries which, not being subject to the law of decreasing returns, have largely released the modern world from the bondage to nature and the resulting pressure of imperious necessity that formerly rendered war perpetual. And for the same reasons he opposes the taking of interest, without which production obviously cannot be conducted on a scale large enough to bring into operation the law of increasing returns. Here, then, is the weak point in his system. He criticises Plato's proposal to maintain a stationary population through communism; he disparages the artificial industries which have, as he says, "power of indefinite expansion"; he fails to suggest any other means of equalizing production and population; and yet he condemns war. As well forbid the oak to heave up the soil or burst asunder the stones that impede its slow but mighty growth.

III

The Romans were originally a pastoral people, and as such necessarily dependent on war to enlarge their pasture lands. The same condition confronted them during and after their transition to agriculture. War was, therefore, the normal condition; peace, the exception. *Beati possidentes* was a favorite legal maxim. In the words of Gaius, "Maxime sua esse credebant quae ex hostibus cepissent." Even after the transition to a money economy, marked by the social crisis in the fifth and fourth centuries,[2] the policy of conquest underwent no change.

[1] Pol., I, 3-6, 8, 9; II, 9; VII, 2, 14, 15. [2] Meyer, *op. cit.*, p. 24.

The first reason was the inland location of the city, which prevented commerce on a large scale and thus made war the only possible form of national expansion. The second and perhaps no less important reason was the force of habit, the power of tradition. The Romans were descended, so they believed, from the war god, and all the roots of their history were entwined with war. How should they tear themselves loose from their past, love what they had despised, and despise what they had loved? "The commercial nations must work for us," they said. "Our business is to conquer them and levy contributions on them. Let us then continue war, which has rendered us their masters, rather than give ourselves to commerce, which has made them our slaves." Vergil's *debellare superbos* has the true Roman ring; so also have the words of Cicero, when he holds commerce disgraceful and declares, "Rei militaris virtus praestat ceteris omnibus: haec nomen populo Romano, haec huic urbi aeternam gloriam peperit." His defense of conquest and of discriminations against the provinces breathes the same spirit.

At a later date, it is true, there was a slight reaction from these views, which remained, however, without practical effect. Cicero was moved by the authority of Plato and Aristotle to an inconsistent and half-hearted expression of peaceful sentiments.[1] The Stoics discarded the doctrine of a natural distinction between masters and slaves, thus leaving no theoretical justification for slavery. Seneca even has a violent polemic against conquest, as sentimental as St. Pierre.[2] With the dissolution of all social and national ties, and the growth of extreme philosophical individualism, the idea of universal peace made its appearance, arising, no doubt, from the legend of the golden age. Strabo discusses it and concludes that a permanent "balance of power" is prerequisite. Probus, attempting somewhat prematurely to dispense with an army, fell a victim to this ideal. But social corruption resulted, as in the time of Rousseau, in a passionate longing for an ideal "state of nature"; and this, reënforcing the current prejudice in favor of a natural and against a money economy,

[1] De Off., I, 11, 81.

[2] Diog. Laert., VII, 1, 122. Epict., II, 8. Seneca, Ad Luc., sec. 47.

effectually prevented any analysis of the real causes of economic decay. Pliny, who had pointed out the most striking symptom of disease,[1] nevertheless failed to get at the root of the matter; instead, he was carried away by the prevailing sentimentality of his age. Expressing the thought common to all his contemporaries, he interpreted literally Vergil's *auri sacra fames*, described each step in the manufacture of money, from the mining to the stamping of the metal, as a *scelus*, the cause of all evils and crimes, and finally exclaimed, "Quantum feliciore aevo, quum res ipsae permutabantur inter se."

Economic conditions and national traditions thus combined to foster the policy of conquest and exploitation. Its success exceeded the wildest dreams of avarice. Well could the Roman poet sing, "Now Rome is golden, since she possesses the mighty treasure of the conquered world."[2] All roads led to Rome; and all roads were but channels for the booty and tribute of the provinces. Millions of the conquered became slaves, who toiled for individual masters. Those who retained their liberty and property were none the less slaves, who toiled for a collective master, the Roman people. The provincials Cicero describes as "*in servitudine nati*"; the provinces, as "*praedia populi Romani*" and "*nervi rei publicae*." They paid tribute in money, in grain, in soldiers; they equipped the fleet, clothed and fed the army; they gave contributions in a thousand forms; finally, stripped of money and of property, they borrowed back from the Roman capitalists, at fabulous interest, a portion of what they had paid as taxes.[3] The exploitation of the provinces, which began when the Roman armies returned laden with booty and when the best lands were declared public property, thus continued in a variety of forms after their submission, and grew more relentless with every passing year. However pursued, it was a part of the Roman *jus belli infinitum: ubi jus belli, ibi jus usurae.*

In Rome, therefore, the ideal of conquest was realized and embodied in unrivaled completeness and splendor. To unlimited

[1] Hist. Nat., XVIII, 7. [2] Ovid, Halieut., ll. 7, 8.

[3] Bruder, "Zur oekon. Charakteristik des röm. Rechts," *Zeitschrift für die ges. Staatswissenschaft*, XXXII, 629–635.

power was added fullness of time in which to demonstrate, once for all, what are the fruits of a war economy, — how he fares who eats his bread in the sweat of another's face. The long death agony of the Roman Empire, the hopeless decay, the inevitable end, over which Gibbon's stately style has shed a melancholy splendor, and for which so many profound reasons have been given, had, after all, a very simple and prosaic cause, — *consumption exceeded production.*[1]

This condition was due to two chief causes. The first was the system of slave labor. As our own experience shows, such a system is of necessity unproductive. It demands great estates, few and simple crops, extensive cultivation, and abundance of fresh land. At best it creates but a slight surplus over the cost of maintenance; and when fresh land is no longer available, so that intensive cultivation becomes necessary, it speedily ceases to create any surplus. It was the knowledge of this fact that spurred on the Southern leaders in the United States to extend slave territory; it was the operation of this law that, after Roman conquests ceased, transformed *servi* into *coloni*. In the meantime, so long as it exists, the slave system tends to destroy, or to prevent the growth of, a middle class and a free laboring class. There is no economic place in society for them. They stand outside the division of labor. Population is stationary, or even decreases; the natural resources of the country are not developed; capital plays little part in the process of production. While land and wealth fall into fewer and fewer hands, and a few colossal fortunes strike the eye, society as a whole grows constantly poorer, because only a part of the people work, and they only under compulsion. Truer words were never spoken than these of Pliny: "*Latifundia perdidere Italiam, jam vero et provincias.*"

The second cause for the excess of consumption over production was the absence of industry at Rome. Her trade was merely "to crush grain and men." This reduced commerce to the importation of tribute in kind or of goods bought with tribute

[1] Roscher, Ansichten, p. 44. Kautz, Nationaloek., I, 144, 148.

money.[1] In consequence, the automatic character of normal commercial and financial relations was wanting, and there was a constant and increasing discrepancy between national production and national consumption. This made itself felt in several ways. On the one hand, the provinces, which paid over so large a portion of their annual produce, were impoverished and ruined; on the other hand, the Italians suffered the same fate through the forced competition of colonial produce. Thus the production of wealth steadily and rapidly decreased, both in Italy and the provinces; while at the same time the unproductive consumption of wealth grew apace through the largesses of corn, the increasing centralization of administration, and the multiplication of capitals, courts, and officials. Moreover, since there was no export, except of money, there was a constant flow of precious metals to the Orient, beyond the frontiers, in payment for imported luxuries. The consequence was a "money famine" of the most serious and far-reaching character. As prices fell the payment of taxes became more and more difficult, and finally impossible, at the very time when the fiscal needs of the empire were rising by leaps and bounds. The Roman world was convulsed. The money economy, which had formed the basis for imperial administration, collapsed; the ancient natural economy reappeared. Tribute was increasingly paid in kind. Soldiers and officials received grants of land in lieu of salaries. Change of occupation became practically impossible. Society crystallized into a regular system of castes.[2] Feudalism was in process of development. But all in vain. The economic disease of which the empire was perishing had eaten too deeply into its vitals. Moreover, the cause still remained; consumption still exceeded production. The provinces were desolate, the people starving, the army scattered and broken, and the barbarians were at the gates. Need we wonder that they were received with open arms? Rome

[1] Pliny, Hist. Nat., XII, 18. Tac., Ann., III, 53. H. von Scheel, "Die wirtschaft. Grundbegriffe in Corpus Juris Civilis," in the *Jahrbuch für Nationaloek.*, 1866, pp. 324, 329–335. Mengotti, Memoria sul commercio dei Romani: "I Romani non ebbero altro commercio che quello di transportare in Italia tutte le ricchezze . . . del mondo conquistato."

[2] Bruder, XXXIII, 695.

was a huge economic parasite, which had wound her tentacles about the provinces, sucking out their lifeblood, until in destroying them she necessarily destroyed herself and sank lifeless in a desert of her own creation.

Among the northern barbarians we find a condition of things still more primitive than in the Homeric age or the reign of Romulus. What the Gauls of Brennus and the Goths of Alaric were, that the Greeks and Romans had been when Athens and Rome were places without a name. War was universally conceived by them as the natural condition of man, existing *per se*, and constituting the most honorable source of gain. A Gallic chieftain first uttered that cry which became the Roman motto: *Vae victis*. And of the Gauls Cicero reports, "Galli turpe esse ducunt frumentum manu quaerere, itaque armati alienos agros demetunt." The Germans were, if possible, still more warlike, and avowed with naïve directness the purpose of conquest and exploitation which the Romans of that day had learned to cloak with plausible pretexts.[1] The cause for such opinions and practices was not human depravity but economic necessity. For example, the Suevi, who, as Cæsar states, "lived very little on grain, principally on milk and flesh," waged ceaseless warfare to keep the country unoccupied for great distances in all directions, simply because without such pasture lands their herds and they themselves would perish. It was a question not of vainglory, as Cæsar seems to intimate, but of self-preservation. The same thing is true of the great Celtic and Germanic migrations. The motive was not love of wandering nor lust of fighting; it was hunger.[2] When the land, as men understood how to use it, could no longer sustain the people, they were confronted with the grim alternative which, in some form, has stared the human race in the face at every stage of barbarism and of civilization, namely, migration — that is, war — or starvation. Sometimes they had recourse to the ancient Aryan custom, known also to Greece and Italy, called the *Ver Sacrum*. Youths chosen with

[1] Cæsar, De Bello Gallico, I, 36, 44; IV, 3. Tac., Ger., XIV. Livy, V, 36.

[2] Arnold, Deut. Urzeit, pp. 251–260. Lamprecht, Deut. Gesch., "Die Völkerwanderungen." Von Ihering, Evolution of the Aryan, pp. 159, 259, 383, 384.

religious rites would go forth, a band of Ishmaelites, to find new homes or to perish, as the fortune of war decided. Sometimes, when hard pressed, the entire nation would join the migration. It was thus that the Gauls under Brennus, and the Cimbri and Teutones, entered the Roman Empire, having arms in their hands, but with the prayer for land constantly upon their lips. Let the Roman people grant them land, and they would be faithful allies. It was the same with the Helvetii and the Usipites and Tencteri, who matched their strength in vain against Cæsar's legions. And it was the same with the Marcomanni and with the invaders who finally overran the western provinces.

IV

The later wars of the Middle Ages, after the close of the *Völkerwanderungen*, may be divided into four classes:. (1) defensive wars, against new invaders; (2) feudal or territorial wars; (3) the Crusades; (4) commercial wars.

Defensive wars originated in the attempt of tribes in less fertile lands to thrust themselves into the place occupied by the conquerors in the old Roman provinces, and to appropriate the revenues derived from the subject population.[1] Notwithstanding local successes, such as those of the Northmen on the Atlantic, the Arabs on the south, and the Magyars and Turks on the east, these invasions were, on the whole, unsuccessful, and ceased altogether as soon as the industrial development in Europe had produced such a division of labor, and consequently such a social and political organization, as to give the defenders unquestioned military superiority. This organization was found first in feudalism and later in centralized states and standing armies based on a money economy. In both cases, however, while the foundation was economic, the active cause was military. The invaders were baffled, in the end, by the organization which their own assaults had called into existence. This was the case with the Arabs in Spain and France, the Danes in England, the Huns and Magyars in Germany.

[1] Molinari, Grandeur et décadence de la guerre, pp. 42–48, 63.

Feudalism is the system in which a standing army, quartered on the tillers of the soil, is intrusted with the defense and administration of the country. War and government are both private undertakings. For a purely agricultural population, with a natural economy, there is no other solution of the problem. The peasants, scattered and occupied on the land, cannot be utilized for war; nor can soldiers or officials be paid except by grants of land. This explains the recurrence of feudalism in ages and countries so remote from each other as to preclude the possibility of imitation; for example, China, Japan, Assyria, Persia, Egypt, Abyssinia, Mexico, Peru. Moreover, feudalism is at once the result and the cause of war. As Laurent says: "La guerre est son unique occupation, c'est sa fonction social. . . . Chaque baron avait le droit de guerroyer, et il en usait, comme aujourd'hui tout individu emploie ses facultés dans le travail." Land being the only source of wealth, the only form of business enterprise was to acquire more land. To do this there were only two means, — marriage and war. Both were, therefore, pursued as systematically as any form of industrial enterprise is to-day. But a marriage involving landed interests almost invariably began or ended in war, — a fact of which Austrian history affords striking examples, in spite of the well-known couplet commending Venus above Mars.[1] At bottom, therefore, the one form of business undertaking was war. It enriched the feudal lords through lands and serfs; it enriched their knights and retainers through booty and ransom. A war with France was long esteemed the only method by which an English gentleman could become rich. Throughout the Middle Ages, therefore, the military classes everywhere held fast to the ancient German belief in the rightfulness of acquiring wealth by force of arms, — a belief clearly and tersely expressed in the Westphalian proverb:

> Rüthen und Roven dat is gheine Schandh',
> Dat dohn de Besten im ganzen Land.

The division of booty became finally a regular system of dividends yielding a large annual interest on the capital invested in military

[1] Bella gerant alii, tu felix Austria nube,
Quae dat Mars aliis, dat tibi regna Venus.

preparations. It was this vested interest of the nobility in the continuance of war that for centuries defeated every attempt to abolish private war. They had sublet their estates for the purpose of providing troops, until the land could not support so many nonproducers, and war was the only business in which they could be employed.[1] The wars which the kings and princes waged with each other, and those which they carried on to crush the lesser nobles, belong to the same class of feudal wars, since they had the same origin, namely, rivalry for control of the revenues from landed estates.

The Crusades appear to stand in a somewhat different category, because of their avowed object and their connection with the church. In order to determine to what extent this was really the case, a brief glance at the history of Christian doctrines concerning war appears advisable.

The early fathers of the church regarded war and Christianity as quite irreconcilable. This view was held by Clement of Alexandria, Tertullian, Origen, Lactantius, Basil, the Manichæans, and especially the Montanists.[2] Nevertheless, from the first many Christians did enlist ;[3] and the reconciliation of the church and the state under Constantine quickly produced the result usually observed when opposition parties, either political or ecclesiastical, come into power, — a tendency radically to modify, and even to reverse, the views previously held. The chief advocates of the legitimacy of war were St. Ambrose and St. Augustine. The former allowed war in defense of property and country. The latter, although deprecating war and slavery, nevertheless justified both.[4] From this time the military part in the church constantly grew and the peace party declined, until the time of the

[1] Vita Heinrici IV Imperatoris, cap. 8.

[2] Gibbon, Decline and Fall, chap. xvi. Herzog, Real-Ency. für protest. Theologie, "Krieg." Nys, Le Droit de la guerre et les precurseurs de Grotius, pp. 24, 82.

[3] Tertullian, Apol., sec. 42, "Navigamus et nos vobiscum et militamus."

[4] "Quid culpatur in bello? An quia moriuntur quandoque morituri, ut dominentur, in pace victuri? Hoc reprehendere timidorum est, non religiosorum." Contra Faustum, Lib. XXII, cap. 74, 75. Cf. Epist., 207, Ad Bonif.; and De Civitate Dei, Lib. IV, cap. 15; Lib. XIX, cap. 7. Also Isodorus, Etymologiae, Lib. V, cap. iv–vii. Nys, pp. 73, 74, 113. Maistre, Soirées de St.-Pétersbourg, II, 20.

Crusades, when the military spirit was blended with religious fanaticism, the clergy and the army were fused in the religio-military orders, and the *bellum Dei* replaced the *treuga Dei*. This change in conceptions and doctrines is clearly exhibited in the citations collected in Gratian's Decretum, dating from 1150, when the change was complete and the church militant in undisputed possession of the field.[1] At the time of the Crusades, therefore, as well as during subsequent centuries, the representatives and spokesmen of the established order, in church and state, were committed to the defense of war. Those of the schoolmen[2] especially, who sought to prove the harmony of reason and revelation, and the divine origin of the existing social and political order, naturally framed their theories of war on contemporary practice; and their successors, the jurists, followed their example in this respect.[3]

Current mediæval doctrines, therefore, ecclesiastical as well as secular, tended rather to accentuate than to obliterate the business side of the Crusades. And certainly there is little in the conduct of the Crusaders, or in their letters, to indicate that they had generally left behind them the motives and passions which found expression in other mediæval wars. It is true that their imaginations were fired by pictures of the hardships of pilgrims and the desecration of holy places; but they were also fired — and much more effectually, it would appear — by tales of the fabulous wealth of the Orient, of the gold and silver and beautiful women waiting the hand of the spoiler.[4] All the kingdoms and riches of the infidels belonged by right to Christians, whose privilege and duty it was to seize them without delay.[5] Men were the more inclined to accept this invitation because, in spite of

[1] Secunda pars, causa xxiii, quaestio prima: "An militare sit peccatum."

[2] Cf. St. Thomas Aquinas, Summa Theol., secunda secundae, quaestio lx, "De bello."

[3] Cf. Giovanni di Lignano, De bello, "Bella provenisse a Deo mediante machina coelesti naturaliter operando" (Nys, p. 77). Grotius, De jure belli ac pacis, I, 2, sec. 4.

[4] "Amor auri et argenti et pulcherrimarum foeminarum voluptas" (the Emperor Alexis to the Count of Flanders).

[5] Brunus, apud Nys, pp. 95, 96.

pestilence and war, the population of Europe had already reached a point where the law of decreasing returns began to inflict hardship. The younger son, who remained a social problem and danger for the next five centuries, and later played so notable a part in the conquest and colonization of the New World, had already made his appearance. Where land was entailed, and no wilderness remained in which to carve out new estates, he was driven forth to seek a livelihood by his sword. Where subdivision had been practiced holdings had grown so small that the revenues no longer supported the feudal tenants in their accustomed mode of life, whence arose oppression of the peasants, who were impoverished to make good the deficiency; but in spite of this many of the feudal lords had fallen hopelessly in debt. From all these causes there resulted a dangerous social ferment and unrest; landless and impoverished men of every class stood ready for any undertaking, however desperate, that promised relief from their misery. To all such the Crusades seemed indeed a call from heaven. But when experience showed that the difficulties were greater and the rewards less than had been supposed, the crusading zeal flagged, and it became necessary to offer greater and greater bounties, not only spiritual but also and especially material in character. Finally, as Molinari acutely remarks: "Lorsque l'expérience eut démontré que les croisades ne payaient pas — on y renonça et les guerres d'expansion des peuples de l'Europe ne recommencèrent qu'après la découverte de l'Amérique."[1]

The last class of mediæval wars, namely, the commercial, were intimately connected with, and in part a continuation of, the Crusades. The Italians had regarded the conquest of the Orient as a commercial venture; the Venetians utilized the Fourth Crusade to establish their commercial monopoly at Constantinople. From this arose prolonged and desperate wars, especially between Genoa and Venice, whose common object was the advancement of their own commerce through the destruction of a dangerous competitor. But such wars did not originate at that time, nor were they confined to Italy. No one can read

[1] Grandeur, etc., p. 49.

Machiavelli's History of Florence or the early chronicles of any mediæval city without perceiving that commercial rivalry shaped their whole policy. The history of the intricate and incessant wars between Pisa and Florence, which Guicciardini narrates at such appalling length, is merely an illustration of what went on all over Europe, especially in Italy, Germany, and the Low Countries, where commercial interests were strongest. In fact, the history of the commercial cities from the eleventh to the fifteenth century reveals, on a small scale, all the features which have characterized the history of commercial nations from the fifteenth to the nineteenth century. The one all-important difference is that, by a wider division of labor and greater activity of the central government, the economic unit has grown from the city state to the national state.

V

As the Middle Ages drew to a close and the spread of a money economy enabled rulers to replace feudal levies with standing armies, wars seemed to increase in magnitude and destructiveness. The task on which men labored was that of nation making, and nations are seldom born except on the field of battle. The existing conditions, social as well as political, all tended to war. The population, turned back from the East by the failure of the Crusades and the advance of the Turks, became increasingly congested. The social ferment and unrest which had preceded the Crusades was again abroad. Every land was filled with "sturdy beggars," whom the laws and the gibbet were powerless to control. The younger son was again a menace to social and political security. When Columbus happened upon America while seeking a new route to the Indies, these conditions facilitated the speedy conquest and permanent colonization of the New World. But the relief thus afforded was not sufficient: the social pressure precipitated the wars of national expansion, which began in Italy two years after the voyage of Columbus and continued, with short intermissions, for three centuries. And political theories faithfully reflected existing conditions. Machiavelli, Bacon, Raleigh, Grotius, Hobbes, Bossuet, Spinoza, Pascal, — all

held that war was conformable to the first principles of nature. However they differed in other respects, all publicists agreed in considering the state as an economic unit whose interests were to be advanced, as occasion offered, by commerce, tariffs, and arms.[1] In other words, they held the mercantile theory. That this contained certain false ideas no one would deny, but the mercantile theory was nevertheless the only one suitable for the age.

In the tremendous struggle that was to decide which of the peoples should have room to grow, and thus in the end to part "the living from the dying nations," there were four periods. The first was marked by the Italian wars from 1495 to 1559; the second, by the so-called religious wars from 1559 to 1648; the third, by the series of contests between the maritime powers from 1648 to 1763, — contests "carried on without truce or intermission among tropical islands and on strange seas, for colonies, commerce, and the balance of power"; the fourth, by the Napoleonic wars, which Professor Sloane has shown to have been a continuation of the same contest.[2] And now, after nearly a century of comparative peace, we have recently seen the beginning of another, or fifth, epoch of strenuous international competition for commerce and colonies.

The Italian wars resulted from a conflict not merely of royal ambitions but also of national interests. Nominally territorial in object, they were at bottom largely commercial. Italy was rich, divided, and weak, — a condition sure to invite foreign interference. France was filled with that dream of Oriental commerce and dominion which is her heritage from the Crusades, and to this end control of Italy and the Italian fleets was prerequisite. And Charles V waged war in Italy not by arms alone but by tariffs; not merely in support of his claims as emperor and as king of Spain, but also, and perhaps chiefly, as the ruler and representative of the Low Countries, who saw in the Italian cities their most dangerous competitors.

It was not otherwise with the religious wars. Sweden fought that she might control the Baltic. France aided Protestants in

[1] Naude, Die Getreidehandel-Politik der europäischen Staaten, Berlin, 1896.

[2] "The Continental System," *Political Science Quarterly*, Vol. XIII, p. 212.

order to weaken the Hapsburgs. The German princes changed sides as interest dictated. Holland grew rich from the plunder and commerce of her foes. Schmoller even declares, "The heroic struggle of the Dutch displays itself, when looked at in a dry light, as a century-long war for the conquest of East Indian colonies, and an equally long privateering assault on the silver fleets of Spain and the Spanish-American colonial trade." This reasoning applies with even more force to the English wars of the period. The Elizabethan sea kings combined religion, politics, and business with a keen eye for the main chance. And Cromwell, who inherited their spirit and plans, had, like them, a twofold quarrel with Spain. "On the side of Mammon he covets Spanish treasure. On the side of God he is opposing Antichrist." [1]

Out of the religious wars, therefore, grew the national commercial wars which filled the last half of the seventeenth century and all of the eighteenth century. They all arose from one and the same cause, — the effort to maintain or to break down a monopoly of trade. At first, since Spain claimed and energetically enforced a monopoly of the New World, the other maritime powers made common cause against her. This was especially true in the West Indies, where the buccaneers — English, French, and Dutch — went trading or fighting as occasion offered; privateers in war, pirates in times of nominal peace, but always with the sympathy and support of their compatriots in the colonies, and always, whatever their disagreements, the sworn enemies of Spain. They furnish, indeed, a most interesting example of the survival upon the sea of that ancient belief in the rightfulness of private warfare which rendered piracy almost as respectable a calling, in the days of Drake and Morgan, as it had been in the time of Odysseus or Rollo of Normandy. By 1650, however, the Spanish sea power was broken; and Cromwell, who secured in Jamaica the naval base indispensable for English operations in the Caribbean Sea, at once threw down the gage of battle to Holland, then mistress of the seas.[2] For the Dutch, having

[1] Egerton, Short History of British Colonial Policy, p. 65, London, 1897.
[2] Seeley, Expansion of England, pp. 146–148.

ousted the Portuguese and Spaniards in the East Indies, had adopted and even extended the restrictive and violent measures whereby their predecessors had destroyed the Arabic commerce.

But this duel with Holland was soon overshadowed by the growing industrial and commercial preponderance of France, which forced England and Holland to unite for self-preservation. This occurred first in 1668, when the Triple Alliance checked the conquests of Louis XIV in the Netherlands. In the War of the Palatinate (1689–1697) the English and Dutch again fought side by side against the common foe; and at La Hogue their fleets wrested from France the mastery of the sea. In the War of the Spanish Succession (1702–1713) the same struggle was continued, to the decided advantage of England, who obtained Gibraltar and portions of Canada and the West Indies. In addition she acquired valuable commercial rights in Portugal by the Methuen Treaty, and in the Spanish colonies by the famous Assiento Contract, whereby a legal, although limited, right of participation was granted in the lucrative Spanish-American trade. This war was undoubtedly a "commercial success" so far as England was concerned. So greatly was commerce stimulated that the wildest speculation ensued, culminating in the South Sea Bubble, which burst in 1721. In spite of this, however, commerce and industry continued to expand. But in 1733 France and Spain concluded a family compact whereby the latter bound herself to transfer to France the share in the Spanish-American trade then held by England under the Assiento Contract, and both pledged themselves to oppose England's commercial and colonial expansion. This compact led to war with Spain (1739–1748), which merged into the War of the Austrian Succession. The war was waged in America, India, Europe, and on every sea. The treaty of Aix-la-Chapelle restored English rights under the Assiento Contract and confirmed her possession of Acadia; but it settled none of the questions which had produced the war. It was therefore a truce, not a peace; and fighting was soon resumed in America over the control of the Ohio valley, without a formal declaration of war. The fundamental issue in the Seven Years' War (1756–1763) was "whether maritime and commercial supremacy

for the next hundred or two hundred years should belong to England or France." The success of England was decisive. Spain and Holland had long since fallen behind; now France, the last of her rivals, was stripped of colonial dominions.

The English trade grew by leaps and bounds. The enormous demand for manufactures stimulated the genius of her artisans and produced the era of great inventions, which in turn revolutionized the industry of the world and established England's supremacy for a century to come. So far did she distance all possible competition through these new methods that she could safely discard and disown the very means by which she had attained this supremacy. This fact is the economic foundation of the free-trade doctrine which Adam Smith proclaimed, and which henceforth became increasingly popular; but for half a century more the mercantilist tradition retained its ascendency in the councils of state. The thirteen colonies were driven to revolt in large part by the pressure of this economic system, which they had outgrown; for while they had previously prospered under the system of mutual monopoly, they now found that, with increase of numbers, the market of the home country no longer absorbed their surplus products at a profitable price. The War of the Revolution had, therefore, the same origin as the other colonial wars of the two preceding centuries. England fought to retain her monopoly, the colonists to break it, and France and Spain to destroy the British Empire. It was this purpose that dictated their secret proposal to England that the colonists be confined between the mountains and the sea. And it was the same purpose which caused the intrigues of France with the discontented Western settlers, through citizen Genet and others, aiming to win them to French allegiance and thereby to recover the Mississippi valley. Nor did this purpose cease to animate French policy until the Louisiana Purchase. That England also continued long to cherish the same hope is shown by her retention of the Western forts. The War of 1812 really formed the closing episode of the Revolution.[1]

[1] Rives, "Spain and the United States in 1795," *American Historical Review*, Vol. IV, p. 62.

The wars of the French Revolution began, as all the world knows, in a conflict of democracy and monarchy. But other and more material reasons lurked in the background from the start; and as time passed these became more and more prominent. The Girondists precipitated the first war in order to fortify their own position by gratifying the traditional French craving for conquest. England was drawn into the contest because the French conquests menaced her commerce. And under Napoleon the war became a duel between England and France for the commercial empire of the world. This is the reason why Napoleon undertook the campaign in Egypt and Syria and planned with the czar an attack on India. For the same reason he instituted the Continental System for the destruction of English trade, while England retaliated with the Orders in Council, designed to crush French industry. For the same reason both parties plundered American commerce, whose growth filled them with envy and alarm. The final victory of England was due to the fact that the great inventions called forth by her commercial opportunities, which in turn resulted from success in previous wars, had given her such a start in industry that her colonies lately in revolt bought more from her after the Revolution than ever before, that Europe could not dispense with her products, and that even Napoleon himself was forced to connive at smuggling of English goods in order to supply his army. And her victory in war left England in a position of industrial and commercial supremacy which has enabled her to feed her growing population abundantly while the millions of the Continent hungered, and to maintain her position as the first of European nations against all comers.

VI

War for commerce thus culminated in the conflict which centers about Napoleon, but it did not altogether cease with his fall. It is true that in continental Europe a new coloring was given to most of the wars which followed through the development of the sentiment of nationality. But this was itself conditioned by economic changes consequent upon the belated development of

national economies out of the smaller economic units. The most powerful cause in the consolidation of Germany and Italy was thus the same which led to the transformation of the United States from a league of states into a federal state, namely, the pressure of economic interests as embodied in commerce. This motive appears even more clearly in the invasion of Algiers (1830); the Crimean War, waged by England in defense of the route to India; the Chinese wars (1857–1860); and, finally, in the invasion of Mexico (1861–1867). The leading objects of this undertaking, as defined by Napoleon III in a letter to the French commander, were:

(1) To place obstacles in the way of the absorption of this part of Mexico by the United States, and (2) to prevent the Anglo-Saxon federation from becoming the sole medium and the sole mart for the commodities and the commerce of the North American continent.[1]

But these commercial wars of the nineteenth century are scattered and trivial episodes compared with those of the preceding century. After the overthrow of Napoleon, as Schmoller points out, "another spirit begins to make its way in commercial policy and in international morality." The sources of this change were two,—political events and philosophic doctrines. The revolt of the American colonies, English and Spanish, was a staggering blow to the old colonial system. And the increase of commerce between the United States and England after their separation convinced men that the old system had been from the start the creation of supreme folly, defeating the end it was intended to serve. On the other hand, "ideas of a humane cosmopolitanism began to instill into men the thought of a change of policy in the economic struggles of European states at the very time when the international rivalry had reached its highest point."[2] These ideas were in part, perhaps in the main, merely an application to politics of the philosophical individualism of the Aufklärung; in part, also, they were the offspring of a distinct theoretic movement, hostile to war, which had gathered momentum for several

[1] Quoted in Gallaudet's International Law, p. 94.
[2] Schmoller, p. 79.

centuries past. During the Middle Ages, when the military spirit first mastered the church, Emmery de la Croix wrote a remarkable work in which, for the first time since the advent of Christianity, peace was advocated on economic grounds. From that time until recent years, amidst the wars and rumors of wars, there has been an unbroken succession of peace advocates. Since the partisans of the established order in church and state had undertaken the defense of war, these advocates of peace have naturally appeared, for the most part, among dissident sects and parties.[1] It was Dante, the exiled Ghibelline, who first gave worthy expression to the ideal of universal peace through a universal monarchy. A contemporary of Dante, Marsilius of Padua, at heart a republican and a Protestant, ably seconded Dante's appeal. Toward the end of the same century Wyclif in England and Raoul de Presles in France assailed the military spirit, especially in the church. The latter denied the rightfulness of all aggression, expressly condemning the Crusaders on this ground, and concluding, "Bella geramus ut pacem habeamus; esto ergo bellando pacificus." But it remained for Erasmus, with all the power of his genius, to sum up the ethical and religious objections to war in a passionate invective and appeal which has always remained the arsenal of the peace party. Unfortunately, as in most works of its class, the appeal is mainly, if not exclusively, to the feelings.

A century later the same idea, with more emphasis on the economic side, was taken up by Sully, who drew up a plan for "la paix perpétuelle de l'Europe." If he is to be credited, Henry IV really intended to anticipate the czar in calling a peace conference, — after he should have rearranged boundaries according to his own ideas. Tommaso Campanella, who reveals the plan of the imperialists in the Thirty Years' War, expected universal peace under a universal Spanish monarchy after all heretics should have been exterminated. William Penn, in his Plan for the Peace of Europe, makes a serious and well-considered

[1] For example, the Christians in ancient times, and more recently the Vaudois, Lollards, Anabaptists, Mennonites, Quakers, and Philippones. Such of the reformed sects as became state churches immediately took up the defense of war. Cf. Luther, Ob Kriegsleute auch in seligem Stande seien künden, and Art. 16 of the Augsburg Confession. The same principle applies to political parties.

argument for peace, based chiefly on the economic damage caused by war. The Abbé de Saint-Pierre, who derived his ideas from Sully and through him from Erasmus and Emmery de la Croix, published in 1713 an intolerably diffuse and sentimental Projet de paix perpétuelle, providing for a grand alliance, to prevent war by mediation. The combined effect of the ruinous wars just ended, the individualistic philosophy of the Aufklärung, and the sentimentality of the age gave this work quite a vogue. Its influence may be traced in Swift's bitter satires and also in those of Voltaire, in spite of his mocking verse concerning the worthy abbé. Rousseau was also deeply influenced, as may be seen in his Extrait du projet de M. l'Abbé de Saint-Pierre, in the Contrat Social, and in the fragment entitled Que l'état de guerre naît de l'état social.

Montesquieu, while justifying war and conquest, argued that the relative equality of nations had rendered them unprofitable. Necker embodied in his report on the finances of France an eloquent argument against war, largely from the economic standpoint. Our own Franklin reproduced the same ideas. Jeremy Bentham wrote a Plan for a Universal and Perpetual Peace, advocating disarmament and a court of arbitration whose moral influence should sway nations. His chief reliance in moderating the belligerent spirit natural to man was the freedom of the press.

Mirabeau, on the eve of the French Revolution, saw near at hand the era of universal peace, and Condorcet repeated the same prophecy, with even more assurance, after the war had begun. Kant, approaching the subject from the side of character, maintained, on the contrary, that war developed the qualities which made for culture, while prolonged peace enervated and debased men.[1] This argument has been frequently repeated and amplified by men who have had little in common, except that they approached the question from the ethical or social rather than the economic side.[2] But five years later, in the midst of the great war (1795), Kant wrote another and more famous work, —

[1] Kritik der Urtheilskraft, 1790.

[2] So W. von Humboldt, Hegel, Maistre, Cousin, De Quincey, Lasson, Proudhon, Ruskin, Von Treitschke, Funck-Brentano, Strauss, Jähns, Bradley, Von Ammon, Mahan.

Zum ewigen Frieden, — in which he cast about for means of arresting war, and found it in that which he had formerly despised, namely, commerce. In the state of nature war was the normal condition; but organized society, he held, tends to peace. The mechanical course of nature, he affirms, "visibly exhibits a design to bring forth concord out of the discord of men, even against their will. This is effected by the commercial spirit, which cannot exist along with war, and which sooner or later controls every people." Through this work Kant became the father of a spiritual progeny of quite another character, including most of the peace propagandists during the last century.

The spread of this peace theory has been powerfully aided by the prevalent philosophical doctrines. The adhesion of the economists, in particular, was secured on this ground. Theology had given way to metaphysics. The Deity reigned, but he did not rule. Nature, with a capital N, was now the active ruler of the universe. Nature was good; to doubt it was to doubt the goodness of God. Man, on the contrary, was bad, having been corrupted by society. To the Physiocrats, as to Rousseau, everything was perfect as it came from the hand of Nature; man alone was the inventor of evil. There was a preordained natural harmony in the universe, — a harmony that man could ruin by his meddling, but was powerless to alter or improve upon.[1] War, being an effort of man to control the natural course of events, was a disturbance of this natural harmony; wherefore the conclusion was clear, — *laissez faire, laissez aller*. This was the faith which passed with that famous phrase into classical economy. The conclusions implied in the theory of Adam Smith were drawn with logical rigor by his successors;[2] such as Bastiat in his Harmonies Économiques, the Philosophical Radicals, the Manchester School of Cobden, Bright, and their latter-day followers, whom Cossa calls the "Optimists."[3]

[1] Ritchie, Darwinism and Politics, p. 6; Natural Rights, p. 45.

[2] Clarke, "Defects of the Old Radicalism," *Political Science Quarterly*, Vol. XIV, pp. 69, 84, 85. Rogers, Cobden and Modern Political Opinion, 1873. Ritchie, Darwinism and Politics, pp. 8, 19.

[3] For example, Laveleye, Molinari, Rogers, Sumner, Goldwin Smith, Godkin, Leroy-Beaulieu, Novicow, Ferri, Jean de Bloch.

But in a progressive condition of society all philosophical doctrines are in a state of unstable equilibrium; and it was not long before this natural-harmony theory of the universe began to totter. In the first place, experience soon proved that the supposed identity between the interest of the individual and the interest of society at large is not nearly so complete as had been assumed. It was this discovery that led John Stuart Mill to depart farther and farther from the orthodox economic creed. Then the demonstrated fact of evolution tended to end the old dualism of man and nature by absorbing man in nature. It no longer sufficed to explain war as a human interference with the harmony of nature; and this not alone because the analogy of warfare with the struggle for existence in other species was too obvious to be mistaken, but because, if man is a part of nature and subject to natural laws, it is a logical absurdity to speak of him as disturbing the harmony of nature. It therefore became necessary to regard war as a natural process, instead of a human interference with the beneficent designs of nature. In order to do this, and at the same time maintain the traditional view that war has no place in the world, as now constituted, recourse was had to the theory that competition in war, as a form of the struggle for existence, is destined to be succeeded by competition in industry. This is the point made by Mr. Spencer and Mr. Kidd in their distinction between the military and industrial types of society. But events have most perversely refused, despite all the exhortations and lamentations and Jeremiads of Mr. Spencer and his followers, to move in the course marked out for them. The individual has become progressively less prominent in the realm of production and more prominent in that of consumption; while state activity, in place of decreasing, as required by Mr. Spencer's formula, has gone on increasing. The era of stateless competition of all individuals in one world economy, which Cobden believed at hand, seems farther from realization than ever. Even the biological analogy which Mr. Spencer so extensively exploited has turned against him, tending rather to show that increasing centralization, in place of decentralization, characterizes higher organisms, and consequently that the type of society which he

regards as the higher is in reality the lower. Finally, in addition to the silent crumbling away of the philosophical foundations of the cosmopolitan theory, and its breakdown on a matter of such capital importance as the relation of the state to industry, has come its total discredit through the ascertained falsity of its economic assumptions. It was assumed (1) that England was destined to be the workshop of the world; (2) that free trade was to solve the economic (or social) problem; (3) that the world was soon to adopt the unrestricted exchange of products; (4) that the era of perpetual peace was close at hand,—all of which, being necessary inferences from the accepted doctrine of economic harmonies, as formulated by Bastiat, were formerly thought above discussion, but now are held beneath it.[1]

VII

Once more, therefore, the relation of industry and war has become an open question, nor is a final answer probable in a world where *πάντα ῥεῖ*. But it can scarcely fail to throw some light on the matter, if we observe wherein each theory has been found wanting.

The fundamental error in the mercantile theory was the belief so tersely expressed by Montaigne: *Il ne se faict aucun proufit qu'au dommage d'aultruy.*[2] From this was derived the maxim attributed to Machiavelli, and consistently acted upon for centuries by all governments, as it still is by horse traders, according to Mr. David Harum,—*quod tibi fiere non vis, id alteri tu primus feceris.* The existence of any community of economic interest between nations was not merely denied; it was not even suspected. That the policy dictated by such a theory was grasping and merciless goes without saying. That incalculable injury was inflicted upon the weaker party to every transaction was a result unavoidable under the theory. But that the stronger party suffered eventually even more than the weaker was the greatest of all possible surprises and disappointments; for herein were revealed the fatal error of the theory and the doom of the whole

[1] Clarke, *op. cit.*, Vol. XIV, pp. 84, 85.

[2] Essais, I, 21.

system of statecraft based thereon. While all the nations pursued this policy for a season, it was in Spain and Portugal, and to a lesser degree in France, that it was followed out to the bitter end. The entire fabric of their colonial empires was reared on this foundation, because, being first on the scene, they naturally occupied the regions where returns could be most quickly obtained, and also because in them the Roman instinct of conquest and exploitation was strongest. The traditions of Sulla and of Verres awoke to life in their conquistadors and viceroys; by no other nation since the Romans has war been so openly and exclusively conceived as a business undertaking. The Spanish conquests were conterminous with the regions occupied by agricultural tribes, not alone because of the difficulty of subduing the nomads of the mountains, jungles, or deserts, but also and chiefly because, even if subdued, such peoples could be made neither to work nor to pay taxes. In the conquered districts the Spaniards imposed themselves as a ruling class. They exploited the natives through the system of *repartimientos;* the king and his favorites exploited them through exorbitant taxes, enormous salaries, universal bribery, and blackmail. Exclusion, prohibition, monopoly, were the very lifeblood of the system; small wonder that the Spanish ambassador replied to Cromwell, seeking freedom of religion and of trade, that "the Inquisition and the monopoly of trade were his master's two eyes." They who will not learn must perish and make room for others wiser and stronger than they, — such is the law of life. The white colonists, broken under a tyranny even more galling than they inflicted on the natives, declined in numbers, mingling their blood with the colored population, and lost the abounding energy and spirit of the conquistadors. There was no incentive to labor merely for the enrichment of greedy officials. Thus the flag of Portugal or Spain speedily came to signify a land of poverty, dirt, and *mañana*.

Meantime how fared it with the home countries? Receiving the enormous riches of the New World and the Old, envied by all nations as the favorites of fortune, they grew steadily poorer and sank into hopeless decay at the very time that Holland and England were growing to astonishing dimensions in riches and power.

Strange enigma? Incomprehensible working of Providence? Not at all. The Spaniard reaped many fields which he had never sown; but this crop was of his own planting. The colonies were impoverished by taxes and extortions; the home country was impoverished by the resulting decay of industry. The wealth of Mexico, Peru, and the Indies flowed away to other lands where wealth was produced for exchange, leaving Spain poorer by many lives and many millions, and above all poorer in the senseless pride and contempt of labor begotten of her apparent wealth. The empire of Spain has perished, the empires of Turkey, Portugal, and France are perishing, of the same disease to which the Roman Empire succumbed: consumption exceeds production. Were Lord Bacon now on earth, he would doubtless revise his essay "Of Greatness of Kingdoms and Estates," wherein he cites the Romans, Turks, and Spaniards as examples of greatness due to the pursuit of arms. They are examples, indeed, which it behooves men deeply to consider,—above all, in France, Germany, and the United States,—examples which show most impressively how they thrive who would live by the labor of others, but not examples apt to provoke imitation.

The doctrine of mutual gain in commerce was promulgated by Adam Smith in the same year which saw the American Declaration of Independence. Within fifteen years after the Peace of Paris the volume of British trade with the revolted colonies had doubled.[1] So signal a vindication of the new theory destroyed at one blow the whole fabric of the time-honored mercantile system. The movement thus inaugurated continued to gain momentum for a century. Unquestionably it constituted "one of the greatest advances made by mankind," and tended strongly to humanize the relations of the nations to each other. But it is equally unquestionable that this theory overshot the mark both in what it assumed and in what it denied. This was evident to clear-sighted men even before the culmination, from 1860 to 1875, of the free-trade and perpetual-peace movement; the last two decades have made its errors so evident that few not

[1] Davidson, "England and her Colonies," *Political Science Quarterly*, Vol. XIV, pp. 39, 40.

hopelessly wedded to their illusions hold the theory in its original unqualified form. Even the Cobden Club at its last meeting felt constrained, in view of the imperiled condition of British trade, formally to recant its peace-at-any-price creed and to advocate a "vigorous" policy in China and elsewhere. Cobden once declared that "no military success is worth so much as the conquest of a new commercial route." It is precisely for the conquest of commercial routes that wars are now chiefly waged.

The fundamental error in the peace and free-trade theory lay in generalizing the particular, — in assuming, without further investigation, that what was true of England at a particular time would be true of England and all other countries at all times. Having acquired, by tariffs and by war, a monopoly of the world's markets, the new inventions which were stimulated by this enormous demand soon placed England beyond the danger of competition. The American Revolution, which destroyed her monopoly of markets, left her still a practical monopoly of the new industrial processes, and so English trade continued to expand. This event, which astounded the world, and England most of all, clearly showed that here the need for state aid and protection no longer existed; the free traders immediately assumed that it never existed. Free trade was now obviously to England's advantage; the free traders assumed that it was to everybody's advantage. England had become the workshop of the world; the free traders assumed that she would always remain the workshop of the world. Yet to-day England remains the only free-trade nation, — remains so because of her urgent need of cheap food and raw materials; and so dangerous has become the economic rivalry of other nations that the general adoption of free trade, whereby they too would secure cheaper food and raw materials, might well work her utter ruin. The fact is, as List clearly perceived, and even orthodox economists[1] now admit, that it may be to the advantage of a nation, by means of tariffs, (1) to resist an industrial change naturally impending or, more frequently, (2) to hasten such a change, because the persons affected could find no other occupation equally profitable, and

[1] Sidgwick, Elements of Politics, pp. 289, 290.

the sum total of national production is thereby rendered greater than under the *régime* of free trade. The other nations, especially Germany and the United States, acting on this principle, have built up industries of such magnitude that they are now able to wrest from the English the control of neutral markets. This is the meaning of the fabulous growth of German and American export trade, and the relative and even absolute decline of English trade, during the last decade. The dogma of the natural and necessary harmony of the interests of all nations is just as false as that of their natural and necessary antagonism. This dogma is true only so long as each nation has a natural monopoly in some one line of industry, — as the free traders erroneously assumed that England had in manufacturing. While competition is absent, commerce is, indeed, a bond of peace and good will between those who buy and those who sell in return. But the moment that two nations embark extensively in the same line of industry, that moment commerce becomes a sword, dividing and setting at enmity those who are rivals for the same markets.[1] For of them it is true, as Montaigne declared, that no profit can be made except to the damage of another. The increase of one is the decrease of the other; the prosperity of one is the other's destruction. Such nations stand to each other as two Indian tribes when there is but game enough for one.

VIII

What, then, is the future of war?

The fundamental fact in history is the law of decreasing returns. It is the source of the origin and development of civilization; for without the pressure of population on subsistence man would never have risen above the lowest savagery. It is equally and for the same reason the source of poverty and war. To equalize population and subsistence there are four possible

[1] Cf. *The Federalist*, No. VI. Bernard, "Growth of Laws and Usage of War" (Oxford Essays, 1856, p. 121). Blanqui, pp. 428–433. Gibbins, Industry in England, pp. 69, 470–474. Shaler, "Natural History of Warfare," *North American Review*, Vol. CLXII, pp. 337, 338. Dicey, "War and Progress," *Eclectic Magazine*, 1867. Guyot, La Morale, p. 186.

means, two operating to check population, two to increase the available food supply. These are: (1) natural limitation of the population, as in India, by disease and famine, or artificial limitation, as in France; (2) emigration; (3) conquest; (4) commerce. By conquest nations have obtained from other lands wealth not produced at home, without rendering an equivalent; the fate of Rome and Spain demonstrates whither this leads. By commerce nations set the laws of constant and increasing against that of decreasing returns, exchanging manufactured articles for food to feed their surplus millions. It is in this way that England maintains, in greater comfort than exists elsewhere in Europe, a population not half of whom could be fed from her own soil. The superiority of commerce to conquest as an economic measure arises from the fact that it stimulates, whereas conquest for purposes of exploitation checks, production on both sides.

Commerce thus is capable, as Aristotle long ago declared, of indefinite expansion. But, nevertheless, it does not altogether escape the law of diminishing returns. In order that people may buy, they must have something to sell; and to this end they must produce more of some article than is absolutely necessary to their own consumption. Not only so, but the marginal cost of producing this quantity must be less than the marginal utility of the imported article. The labor-pain of production must be small compared to the pleasure of consumption, or people will not continue to produce. Obviously this is a standard which varies from place to place. Throughout the tropical and subtropical regions, where the indisposition to labor is great and the pain of labor consequently high, it is this subjective limit which causes vast resources to lie undeveloped, checks production, keeps down commerce, and drives plantation owners either to adopt some form of forced labor — as witness Java — or to abandon in despair the attempt to exploit the natural resources of the country. To measure the probable commerce of such regions by their natural resources alone, without taking account of this subjective factor, — the character of the people, — is only to practice self-deception and court bitter disappointment.

On the other hand, in regions where the pain of labor is not held so great, production is pursued on a more intensive plan. This explains the anomalous fact that the countries having the largest production are often not those with the greatest natural wealth. But, inasmuch as every increase of agricultural production means a larger proportional increase of labor, *ceteris paribus*, there is always a point at which it ceases to pay. This, then, is the fixed or objective limit to production and consequently to commerce. As population increases, it therefore becomes progressively more difficult and finally impossible to create a surplus of agricultural products for purposes of exchange. When this point is reached the country ceases to offer a market for manufactured goods, for the reason that there is nothing wherewith to pay for them; and the people are confronted with the old dilemma, — starvation, emigration, war, or manufacturing. In this way the number of manufacturing nations is constantly increasing and that of agricultural nations decreasing, the hunters multiplying while the game diminishes. The result is a rivalry for markets, — that is, for the means to employ and feed the people, — which grows fiercer day by day. A half century ago this contingency seemed remote enough; England, secure in her industrial and commercial supremacy, having already everything for which men fight, was passionately enamored of peace. To-day her monopoly is broken and her supremacy is passing; competitors are taking the work from her factories and the bread from her people; the habitable earth is parceled out and all nations are arming by land and sea. For, strange as it may appear, the nations are still sadly lacking in that sweet reasonableness which should move them to yield, without a protest, to their betters.

Does all this portend the end of war? It is true that tariffs are used to-day with more effect than were armies in former times. Weaker competitors are driven to the wall and forced out of the race. War of the most deadly character — war which ruins states and crushes nations — is waged without firing a shot. Added to this is the cost of armies and navies, which only the strongest can bear. Shall we therefore conclude, with M. Jean de Bloch, that war has become so expensive and deadly as to be

impossible? His theory is plausible but not convincing. Recent experience confirms the maxim that the more deadly the weapons, the less the slaughter; while the cost of war is one of the crucial tests in the struggle for existence, one of the means whereby the living are parted from the dying nations. It is true that the object and the character of war have changed. Conquests are no longer made by civilized nations for purposes of tribute, nor by the most progressive among them for the purpose of exploitation through unequal commercial laws. If any lapse from the path of rectitude in this respect, they have their reward; no conquest can be permanently profitable to one side which is not so to both. Moreover, war is to-day, more than ever before, a conflict not of arms but of civilizations; the more complicated its machinery, the more it depends upon the intelligence and character of the man behind the gun, and the greater is the drain upon the resources of the nation. To the ancient motto, *Si vis pacem, para bellum*, another must therefore be added, *Si vis bellum, para pacem*. That nation is best prepared for war which best develops and conserves its energies. But all these changes, far-reaching though they are, do not, as is fondly imagined, tend to the abolition of war. The cause of war is as permanent as hunger itself; since both spring from the same source, the law of decreasing returns. So long as that persists, war must remain, in the last analysis, a national business undertaking, designed to procure or preserve foreign markets, that is, the means of continued growth and prosperity. *Chacun doit grandir ou mourir.*[1]

[1] Vâcher de Lapouge, Les Selections Sociales, chap. viii.

Additional References:

Herbert Spencer, Principles of Sociology, Part V, chaps. xvii, xviii, xix. Herbert Spencer, Progress, Its Law and Cause, in Essays: Scientific, Political, and Speculative, Vol. I. J. S. Mackenzie, Introduction to Social Philosophy, chaps. v and vi.

PART III — THE FACTORS OF SOCIAL PROGRESS

A. THE PHYSICAL AND BIOLOGICAL FACTORS

X

INFLUENCE EXERCISED BY PHYSICAL LAWS OVER THE ORGANIZATION OF SOCIETY AND THE CHARACTER OF INDIVIDUALS[1]

If we inquire what those physical agents are by which the human race is most powerfully influenced, we shall find that they may be classed under four heads, namely, climate, food, soil, and the general aspect of nature; by which last I mean those appearances which, though presented chiefly to the sight, have, through the medium of that or other senses, directed the association of ideas, and hence in different countries have given rise to different habits of national thought. To one of these four classes may be referred all the external phenomena by which man has been permanently affected. The last of these classes, or what I call the general aspect of nature, produces its principal results by exciting the imagination, and by suggesting those innumerable superstitions which are the great obstacles to advancing knowledge. And as, in the infancy of a people, the power of such superstitions is supreme, it has happened that the various aspects of nature have caused corresponding varieties in the popular character, and have imparted to the national religion peculiarities which, under certain circumstances, it is impossible to efface. The other three agents, namely, climate, food, and soil, have, so far as we are aware, had no direct influence of this sort; but they

[1] From Buckle's History of Civilization in England, chap. ii, London, 1857–1861.

have, as I am about to prove, originated the most important consequences in regard to the general organization of society, and from them there have followed many of those large and conspicuous differences between nations which are often ascribed to some fundamental difference in the various races into which mankind is divided. But while such original distinctions of race are altogether hypothetical,[1] the discrepancies which are caused by difference of climate, food, and soil are capable of a satisfactory explanation, and, when understood, will be found to clear up many of the difficulties which still obscure the study of history. I purpose, therefore, in the first place, to examine the laws of these three vast agents in so far as they are connected with man in his social condition; and having traced the working of those laws with as much precision as the present state of physical knowledge will allow, I shall then examine the remaining agent, namely, the general aspect of nature, and shall endeavor to point out the most important divergences to which its variations have, in different countries, naturally given rise.

Beginning, then, with climate, food, and soil, it is evident that these three physical powers are in no small degree dependent on each other: that is to say, there is a very close connection between the climate of a country and the food which will ordinarily be grown in that country; while at the same time the food is itself influenced by the soil which produces it, as also by the elevation or depression of the land, by the state of the atmosphere, and, in a word, by all those conditions to the assemblage

[1] I cordially subscribe to the remark of one of the greatest thinkers of our time, who says of the supposed differences of race, "Of all vulgar modes of escaping from the consideration of the effect of social and moral influences on the human mind, the most vulgar is that of attributing the diversities of conduct and character to inherent and natural differences" (Mill's Principles of Political Economy, Vol. I, p. 390). Ordinary writers are constantly falling into the error of assuming the existence of this difference, which may or may not exist, but which most assuredly has never been proved. Some singular instances of this will be found in Alison's History of Europe, Vol. II, p. 336; Vol. VI, p. 136; Vol. VIII, pp. 525, 526; Vol. XIII, p. 347; where the historian thinks that by a few strokes of his pen he can settle a question of the greatest difficulty, connected with some of the most intricate problems in physiology. On the supposed relation between race and temperament, see Comte, Philosophie Positive, Vol. III, p. 355.

of which the name of physical geography is, in its largest sense, commonly given.[1]

The union between these physical agents being thus intimate, it seems advisable to consider them not under their own separate heads but rather under the separate heads of the effects produced by their united action. In this way we shall rise at once to a more comprehensive view of the whole question; we shall avoid the confusion that would be caused by artificially separating phenomena which are in themselves inseparable; and we shall be able to see more clearly the extent of that remarkable influence which, in an early stage of society, the powers of nature exercise over the fortunes of man.

Of all the results which are produced among a people by their climate, food, and soil, the accumulation of wealth is the earliest, and in many respects the most important. For although the progress of knowledge eventually accelerates the increase of wealth, it is nevertheless certain that, in the first formation of society, the wealth must accumulate before the knowledge can begin. As long as every man is engaged in collecting the materials necessary for his own subsistence there will be neither leisure nor taste for higher pursuits; no science can possibly be created, and the utmost that can be effected will be an attempt to economize labor by the contrivance of such rude and imperfect instruments as even the most barbarous people are able to invent.

In a state of society like this the accumulation of wealth is the first great step that can be taken, because without wealth there can be no leisure, and without leisure there can be no knowledge. If what a people consume is always exactly equal to what they possess, there will be no residue, and therefore, no capital being accumulated, there will be no means by which the unemployed

[1] As to the proper limits of physical geography, see Prichard on Ethnology, in *Report of the British Association for 1847*, p. 235. The word "climate" I always use in the narrow and popular sense. Dr. Forry and many previous writers make it nearly coincide with "physical geography": "Climate constitutes the aggregate of all the external physical circumstances appertaining to each locality in its relation to organic nature" (Forry, Climate of the United States and its Endemic Influences, p. 127, New York, 1842).

classes may be maintained.[1] But if the produce is greater than the consumption, an overplus arises, which, according to well-known principles, increases itself, and eventually becomes a fund out of which, immediately or remotely, every one is supported who does not create the wealth upon which he lives. And now it is that the existence of an intellectual class first becomes possible, because for the first time there exists a previous accumulation, by means of which men can use what they did not produce, and are thus enabled to devote themselves to subjects for which at an earlier period the pressure of their daily wants would have left them no time.

Thus it is that of all the great social improvements the accumulation of wealth must be the first, because without it there can be neither taste nor leisure for that acquisition of knowledge on which, as I shall hereafter prove, the progress of civilization depends. Now, it is evident that among an entirely ignorant people the rapidity with which wealth is created will be solely regulated by the physical peculiarities of their country. At a later period, and when the wealth has been capitalized, other causes come into play; but until this occurs the progress can only depend on two circumstances: first, on the energy and regularity with which labor is conducted, and, secondly, on the returns made to that labor by the bounty of nature. And these two causes are themselves the result of physical antecedents. The returns made to labor are governed by the fertility of the soil, which is itself regulated partly by the admixture of its chemical components, partly by the extent to which, from rivers or from other natural causes, the soil is irrigated, and partly by the heat and humidity of the atmosphere. On the other hand, the energy and regularity with which labor is conducted will be entirely dependent on the influence of climate. This will display itself in two different ways. The first, which is a very obvious consideration, is, that if the heat is intense, men will be indisposed, and in some degree unfitted, for that active industry

[1] By unemployed classes, I mean what Adam Smith calls the unproductive classes; and though both expressions are strictly speaking inaccurate, the word "unemployed" seems to convey more clearly than any other the idea in the text.

which in a milder climate they might willingly have exerted. The other consideration, which has been less noticed, but is equally important, is, that climate influences labor not only by enervating the laborer or by invigorating him, but also by the effect it produces on the regularity of his habits.[1] Thus we find that no people living in a very northern latitude have ever possessed that steady and unflinching industry for which the inhabitants of temperate regions are remarkable. The reason of this becomes clear when we remember that in the more northern countries the severity of the weather and, at some seasons, the deficiency of light render it impossible for the people to continue their usual out-of-door employments. The result is that the working classes, being compelled to cease from their ordinary pursuits, are rendered more prone to desultory habits; the chain of their industry is, as it were, broken, and they lose that impetus which long-continued and uninterrupted practice never fails to give. Hence there arises a national character more fitful and capricious than that possessed by a people whose climate permits the regular exercise of their ordinary industry. Indeed, so powerful is this principle that we may perceive its operation even under the most opposite circumstances. It would be difficult to conceive a greater difference in government, laws, religion, and manners than that which distinguishes Sweden and Norway, on the one hand, from Spain and Portugal, on the other. But these four countries have one great point in common: in all of them continued agricultural industry is impracticable. In the two southern countries labor is interrupted by the heat, by the dryness of the weather, and by the consequent state of the soil. In the two northern countries the same effect is produced by the severity of the winter and the shortness of the days. The consequence is that these four nations, though so different in other respects, are all remarkable for a certain instability and fickleness of character; presenting a striking contrast to the more regular

[1] This has been entirely neglected by the three most philosophical writers on climate, — Montesquieu, Hume, and M. Charles Comte in his Traité de Législation. It is also omitted in the remarks of M. Guizot on the influence of climate, Civilisation en Europe, p. 97.

and settled habits which are established in countries whose climate subjects the working classes to fewer interruptions, and imposes on them the necessity of a more constant and unremitting employment.[1]

These are the great physical causes by which the creation of wealth is governed. There are, no doubt, other circumstances which operate with considerable force, and which, in a more advanced state of society, possess an equal, and sometimes a superior, influence. But this is at a later period; and looking at the history of wealth in its earliest stage, it will be found to depend entirely on soil and climate: the soil regulating the returns made to any given amount of labor; the climate regulating the energy and constancy of the labor itself. It requires but a hasty glance at past events to prove the immense power of these two great physical conditions; for there is no instance in history of any country being civilized by its own efforts, unless it has possessed one of these conditions in a very favorable form. In Asia civilization has always been confined to that vast tract where a rich and alluvial soil has secured to man that wealth without some share of which no intellectual progress can begin. This great region extends, with a few interruptions, from the east of southern China to the western coasts of Asia Minor, of Phœnicia, and of Palestine. To the north of this immense belt there is a long line of barren country which has invariably been peopled by rude and wandering tribes, who are kept in poverty by the ungenial nature of the soil, and who, as long as they remained on it, have never emerged from their uncivilized state. How entirely this depends on physical causes is evident from the fact that these same Mongolian and Tartarian hordes have, at different periods, founded great monarchies in China, in India, and in Persia, and have on all such occasions attained a civilization

[1] See the admirable remarks in Laing's Denmark, 1852, pp. 204, 366, 367; though Norway appears to be a better illustration than Denmark. In Rey's Science Sociale, Vol. I, pp. 195, 196, there are some calculations respecting the average loss to agricultural industry caused by changes in the weather; but no notice is taken of the connection between these changes, when abrupt, and the tone of the national character.

nowise inferior to that possessed by the most flourishing of the ancient kingdoms. For in the fertile plains of southern Asia[1] nature has supplied all the materials of wealth; and there it was that these barbarous tribes acquired for the first time some degree of refinement, produced a national literature, and organized a national polity; none of which things they, in their native land, had been able to effect.[2] In the same way, the Arabs, in their own country, have, owing to the extreme aridity of their soil,[3] always been a rude and uncultivated people; for in their case, as in all others, great ignorance is the fruit of great poverty. But in the seventh century they conquered Persia;[4] in the eighth century they conquered the best part of Spain;[5] in the ninth century they conquered the Punjaub, and eventually nearly the whole of India.[6] Scarcely were they established in their fresh settlements when their character seemed to undergo a

[1] This expression has been used by different geographers in different senses; but I take it in its common acceptation, without reference to the more strictly physical view of Ritter and his followers in regard to central Asia. See Prichard's Physical History of Mankind, 1844, Vol. IV, p. 278. At page 92, Prichard makes the Himalaya the southern boundary of central Asia.

[2] There is reason to believe that the Tartars of Tibet received even their alphabet from India. See the interesting Essay on Tartarian Coins in *Journal of Asiatic Society*, Vol. IV, pp. 276, 277; and on the Scythian Alphabet, see Vol. XII, p. 336.

[3] In Somerville's Physical Geography, Vol. I, p. 132, it is said that in Arabia there are "no rivers"; but Mr. Wellsted (Travels in Arabia, Vol. II, p. 409) mentions one which empties itself into the sea five miles west of Aden. On the streams in Arabia, see Meiners, Über die Fruchtbarkeit der Länder, Vol. I, pp. 149, 150. That the sole deficiency is want of irrigation appears from Burckhardt, who says (Travels in Arabia, Vol. I, p. 240), "In Arabia, wherever the ground can be irrigated by wells, the sands may be soon made productive." And for a striking description of one of the oases of Oman, which shows what Arabia might have been with a good river system, see *Journal of Geographical Society*, Vol. VII, pp. 106, 107.

[4] Mr. Morier (*Journal of Geographical Society*, Vol. VII, p. 230) says, "The conquest of Persia by the Saracens, A.D. 651." However, the fate of Persia was decided by the battles of Kudseah and Nahavund, which were fought in 638 and 641. See Malcolm's History of Persia, Vol. I, pp. xvi, 139, 142.

[5] In 712, Hallam's Middle Ages, Vol. I, p. 369.

[6] They were established in the Punjaub early in the ninth century, but did not conquer Guzerat and Malwa until five hundred years later. Compare Wilson's note in the Vishnu Purana, pp. 481, 482, with Asiatic Researches, Vol. IX, pp. 187, 188, 203. On their progress in the more southern part of the Peninsula, see *Journal of Asiatic Society*, Vol. III, pp. 222, 223; Vol. IV, pp. 28–30.

great change. They, who in their original land were little else than roving savages, were now for the first time able to accumulate wealth, and, therefore, for the first time did they make some progress in the arts of civilization. In Arabia they had been a mere race of wandering shepherds;[1] in their new abodes they became the founders of mighty empires, — they built cities, endowed schools, collected libraries; and the traces of their power are still to be seen at Cordova, at Bagdad, and at Delhi.[2] Precisely in the same manner, there is adjoining Arabia at the north, and only separated from it elsewhere by the narrow waters of the Red Sea, an immense sandy plain, which, covering the

[1] "A race of pastoral barbarians." Dickinson on the Arabic Language, in *Journal of Asiatic Society*, Vol. V, p. 323. Compare Reynier, Économie des Arabes, pp. 27, 28; where, however, a very simple question is needlessly complicated. The old Persian writers bestowed on them the courteous appellation of "a band of naked lizard-eaters" (Malcolm's History of Persia, Vol. I, p. 133). Indeed, there are few things in history better proved than the barbarism of a people whom some writers wish to invest with a romantic interest. The eulogy passed on them by Meiners is rather suspicious; for he concludes by saying, "die Eroberungen der Araber waren höchst selten so blutig und zerstörend, als die Eroberungen der Tataren, Persen, Türken, u.s.w., in ältern und neuern Zeiten waren" (Fruchtbarkeit der Länder, Vol. I, p. 153). If this is the best that can be said, the comparison with Tartars and Turks does not prove much; but it is singular that this learned author should have forgotten a passage in Diodorus Siculus which gives a pleasant description of them nineteen centuries ago on the eastern side (Bibliothec. Hist., Lib. ii, Vol. II, p. 137): ἔχουσι δὲ βίον λῃστρικὸν, καὶ πολλὴν τῆς ὁμόρου χώρας κατατρέχοντες λῃστεύουσιν, etc.

[2] The only branch of knowledge which the Arabians ever raised to a science was astronomy, which began to be cultivated under the caliphs about the middle of the eighth century, and went on improving until "la ville de Bagdad fut, pendant le dixième siècle, le théâtre principal de l'astronomie chez les orientaux" (Montucla, Histoire des Mathématiques, Vol. I, pp. 355, 364). The old pagan Arabs, like most barbarous people living in a clear atmosphere, had such an empirical acquaintance with the celestial phenomena as was useful for practical purposes; but there is no evidence to justify the common opinion that they studied this subject as a science. Dr. Dorn (*Transactions of the Asiatic Society*, Vol. II, p. 371) says, "Of a scientific knowledge of astronomy among them no traces can be discovered." Beausobre (Histoire de Manichée, Vol. I, p. 20) is quite enthusiastic about the philosophy of the Arabs in the time of Pythagoras! and he tells us, that "ces peuples ont toujours cultivé les sciences." To establish this fact he quotes a long passage from a life of Mohammed written early in the eighteenth century by Boulainvilliers, whom he calls "un des plus beaux génies de France." If this is an accurate description, those who have read the works of Boulainvilliers will think that France was badly off for men of genius; and as to his life of

whole of Africa in the same latitude, extends westward until it reaches the shores of the Atlantic.[1] This enormous tract is, like Arabia, a barren waste;[2] and therefore, as in Arabia, the inhabitants have always been entirely uncivilized, acquiring no knowledge, simply because they have accumulated no wealth.[3] But this great desert is, in its eastern part, irrigated by the waters of the Nile, the overflowing of which covers the sand with a rich alluvial deposit, that yields to labor the most abundant, and

Mohammed, it is little better than a romance; the author was ignorant of Arabic, and knew nothing which had not been already communicated by Maracci and Pococke. See Biographie Universelle, Vol. V, p. 321.

In regard to the later Arabian astronomers, one of their great merits was to approximate to the value of the annual precession much closer than Ptolemy had done. See Grant's History of Physical Astronomy, p. 319, 1852.

[1] Indeed, it goes beyond it: "the trackless sands of the Sahara desert, which is even prolonged for miles into the Atlantic Ocean in the form of sandbanks" (Somerville's Physical Geography, Vol. I, p. 149). For a singular instance of one of these sandbanks being formed into an island, see *Journal of Geographical Society*, Vol. II, p. 284. The Sahara desert, exclusive of Bornu and Darfur, covers an area of 194,000 square leagues; that is, nearly three times the size of France, or twice the size of the Mediterranean. Compare Lyell's Geology, p. 694, with Somerville's Connection of the Sciences, p. 294. As to the probable southern limits of the plateau of the Sahara, see Richardson's Mission to Central Africa, 1853, Vol. II, pp. 146, 156; and as to the part of it adjoining the Mandingo country, see Mungo Park's Travels, Vol. I, pp. 237, 238. Respecting the country south of Mandara, some scanty information was collected by Denham in the neighborhood of Lake Tchad (Denham's Northern and Central Africa, pp. 121, 122, 144–146).

[2] Richardson, who traveled through it south of Tripoli, notices its "features of sterility, of unconquerable barrenness" (Richardson's Sahara, 1848, Vol. I, p. 86); and see the striking picture at page 409. The long and dreary route from Murzuk to Yeu, on Lake Tchad, is described by Denham, one of the extremely few Europeans who have performed that hazardous journey (Denham's Central Africa, pp. 2–60). Even on the shore of the Tchad there is hardly any vegetation, "a coarse grass and a small bell-flower being the only plants that I could discover," p. 90. Compare his remark on Bornu, p. 317. The condition of part of the desert in the fourteenth century is described in the Travels of Ibn Batuta, p. 233, which should be compared with the account given by Diodorus Siculus of the journey of Alexander to the temple of Ammon (Bibliothec. Hist., Lib. XVII, Vol. VII, p. 348).

[3] Richardson, who traveled in 1850 from Tripoli to within a few days of Lake Tchad, was struck by the stationary character of the people. He says: "Neither in the desert nor in the kingdoms of central Africa is there any march of civilization. All goes on according to a certain routine established for ages past" (Mission to Central Africa, Vol. I, pp. 304, 305). See similar remarks in Pallme's Travels in Kordofan, pp. 108, 109.

indeed the most extraordinary, returns.[1] The consequence is, that in that spot wealth was rapidly accumulated, the cultivation of knowledge quickly followed, and this narrow strip of land[2] became the seat of Egyptian civilization, — a civilization which, though grossly exaggerated,[3] forms a striking contrast to the barbarism of the other nations of Africa, none of which have been able to work out their own progress, or emerge, in any degree, from the ignorance to which the penury of nature has doomed them.

These considerations clearly prove that of the two primary causes of civilization, the fertility of the soil is the one which in

[1] Abd-Allatif, who was in Egypt early in the thirteenth century, gives an interesting account of the rising of the Nile, to which Egypt owes its fertility (Abd-Allatif, Relation de l'Égypte, pp. 329–340, 374–376, and Appendix, p. 504). See also on these periodical inundations, Wilkinson's Ancient Egyptians, Vol. IV, pp. 101–104; and on the half-astronomical, half-theological notions connected with them, pp. 372–377; Vol. V, pp. 291, 292. Compare on the religious importance of the Nile, Bunsen's Egypt, Vol. I, p. 409. The expression, therefore, of Herodotus (Book II, chap. v, Vol. I, p. 484), δῶρον τοῦ ποταμοῦ, is true in a much larger sense than he intended; since to the Nile Egypt owes all the physical peculiarities which distinguish it from Arabia and the great African desert. Compare Heeren's African Nations, Vol. II, p. 58; Reynier, Économie des Arabes, p. 3; Postans on the Nile and Indus, in *Journal of Asiatic Society*, Vol. VII, p. 275, and on the difference between the soil of the Nile and that of the surrounding desert, see Volney, Voyage en Syrie et en Égypte, Vol. I, p. 14.

[2] "The average breadth of the valley from one mountain range to the other, between Cairo in Lower and Edfu in Upper Egypt, is only about seven miles; and that of the cultivable land, whose limits depend on the inundation, scarcely exceeds five and a half" (Wilkinson's Ancient Egyptians, Vol. I, p. 216). According to Gerard, "the mean width of the valley between Syene and Cairo is about nine miles." Note in Heeren's African Nations, Vol. II, p. 62.

[3] I will give one instance of this from an otherwise sensible writer, and a man, too, of considerable learning: "As to the physical knowledge of the Egyptians, their contemporaries gave them credit for the astonishing power of their magic; and as we cannot suppose that the instances recorded in Scripture were to be attributed to the exertion of supernatural powers, we must conclude that they were in possession of a more intimate knowledge of the laws and combinations of nature than what is professed by the most learned men of the present age" (Hamilton's Ægyptiaca, pp. 61, 62). It is a shame that such nonsense should be written in the nineteenth century; and yet a still more recent author (Vyse on the Pyramids, Vol. I, p. 28) assures us that "the Egyptians, for especial purposes, were endowed with great wisdom and science." Science, properly so called, the Egyptians had none; and as to their wisdom, it was considerable enough to distinguish them from barbarous nations like the old Hebrews, but it was inferior to that of the Greeks, and it was of course immeasurably below that of modern Europe.

the ancient world exercised most influence. But in European civilization the other great cause — that is to say, climate — has been the most powerful; and this, as we have seen, produces an effect partly on the capacity of the laborer for work, partly on the regularity or irregularity of his habits. The difference in the result has curiously corresponded with the difference in the cause. For although all civilization must have for its antecedent the accumulation of wealth, still what subsequently occurs will be in no small degree determined by the conditions under which the accumulation took place. In Asia and in Africa the condition was a fertile soil, causing an abundant return; in Europe it was a happier climate, causing more successful labor. In the former case, the effect depends on the relation between the soil and its produce, — in other words, the mere operation of one part of external nature upon another. In the latter case, the effect depends on the relation between the climate and the laborer; that is the operation of external nature not upon itself but upon man. Of these two classes of relations, the first, being the less complicated, is the less liable to disturbance, and therefore came sooner into play. Hence it is that, in the march of civilization, the priority is unquestionably due to the most fertile parts of Asia and Africa. But although their civilization was the earliest, it was very far indeed from being the best or most permanent. Owing to circumstances which I shall presently state, the only progress which is really effective depends not upon the bounty of nature but upon the energy of man. Therefore it is that the civilization of Europe, which in its earliest stage was governed by climate, has shown a capacity of development unknown to those civilizations which were originated by soil. For the powers of nature, notwithstanding their apparent magnitude, are limited and stationary; at all events, we have not the slightest proof that they have ever increased, or that they will ever be able to increase. But the powers of man, so far as experience and analogy can guide us, are unlimited; nor are we possessed of any evidence which authorizes us to assign even an imaginary boundary at which the human intellect will of necessity be brought to a stand. And as this power which the mind possesses of

increasing its own resources is a peculiarity confined to man, and one eminently distinguishing him from what is commonly called external nature, it becomes evident that the agency of climate, which gives him wealth by stimulating his labor, is more favorable to his ultimate progress than the agency of soil, which likewise gives him wealth, but which does so not by exciting his energies but by virtue of a mere physical relation between the character of the soil and the quantity or value of the produce that it almost spontaneously affords.

Thus far as to the different ways in which climate and soil affect the creation of wealth. But another point of equal, or perhaps of superior, importance remains behind. After the wealth has been created, a question arises as to how it is to be distributed; that is to say, what proportion is to go to the upper classes and what to the lower. In an advanced stage of society this depends upon several circumstances of great complexity, and which it is not necessary here to examine. But in a very early stage of society, and before its later and refined complications have begun, it may, I think, be proved that the distribution of wealth is, like its creation, governed entirely by physical laws; and that those laws are moreover so active as to have invariably kept a vast majority of the inhabitants of the fairest portion of the globe in a condition of constant and inextricable poverty. If this can be demonstrated, the immense importance of such laws is manifest. For since wealth is an undoubted source of power, it is evident that, supposing other things equal, an inquiry into the distribution of wealth is an inquiry into the distribution of power, and, as such, will throw great light on the origin of those social and political inequalities the play and opposition of which form a considerable part of the history of every civilized country.

If we take a general view of this subject, we may say that after the creation and accumulation of wealth have once fairly begun, it will be distributed among two classes, — those who labor, and those who do not labor; the latter being, as a class, the more able, the former the more numerous. The fund by which both classes are supported is immediately created by the lower class, whose physical energies are directed, combined, and, as it

were, economized, by the superior skill of the upper class. The reward of the workmen is called their wages; the reward of the contrivers is called their profits. At a later period there will arise what may be called the saving class; that is, a body of men who neither contrive nor work, but lend their accumulations to those who contrive, and in return for the loan receive a part of that reward which belongs to the contriving class. In this case the members of the saving class are rewarded for their abstinence in refraining from spending their accumulations, and this reward is termed the interest of their money; so that there is made a threefold division, — interest, profits, and wages. But this is a subsequent arrangement, which can only take place to any extent when wealth has been considerably accumulated; and in the stage of society we are now considering, this third or saving class can hardly be said to have a separate existence.[1] For our present purpose, therefore, it is enough to ascertain what those natural laws are which, as soon as wealth is accumulated, regulate the proportion in which it is distributed to the two classes of laborers and employers.

Now it is evident that wages being the price paid for labor, the rate of wages must, like the price of all other commodities, vary according to the changes in the market. If the supply of laborers outstrips the demand, wages will fall; if the demand exceeds the supply, they will rise. Supposing, therefore, that in any country there is a given amount of wealth to be divided between employers and workmen, every increase in the number of the workmen will tend to lessen the average reward each can receive. And if we set aside those disturbing causes by which all general views are affected, it will be found that, in the long

[1] In a still more advanced stage there is a fourth division of wealth, and part of the produce of labor is absorbed by rent. This, however, is not an element of price, but a consequence of it; and in the ordinary march of affairs, considerable time must elapse before it can begin. Rent, in the proper sense of the word, is the price paid for using the natural and indestructible powers of the soil, and must not be confused with rent commonly so called; for this last also includes the profits of stock. I notice this, because several of the opponents of Ricardo have placed the beginning of rent too early, by overlooking the fact that apparent rent is very often profits disguised.

run, the question of wages is a question of population; for although the total sum of the wages actually paid depends upon the largeness of the fund from which they are drawn, still the amount of wages received by each man must diminish as the claimants increase, unless, owing to other circumstances, the fund itself should so advance as to keep pace with the greater demands made upon it.[1]

To know the circumstances most favorable to the increase of what may be termed the wages-fund is a matter of great moment, but is one with which we are not immediately concerned. The question we have now before us regards not the accumulation of wealth but its distribution; and the object is to ascertain what those physical conditions are which, by encouraging a rapid growth of population, oversupply the labor market, and thus keep the average rate of wages at a very low point.

Of all the physical agents by which the increase of the laboring classes is affected, that of food is the most active and universal. If two countries, equal in all other respects, differ solely in this, — that in one the national food is cheap and abundant,

[1] "Wages depend, then, on the proportion between the number of the laboring population and the capital or other funds devoted to the purchase of labor; we will say, for shortness, the capital. If wages are higher at one time or place than at another, if the subsistence and comfort of the class of hired laborers are more ample, it is, and can be, for no other reason than because capital bears a greater proportion to population. It is not the absolute amount of accumulation or of production that is of importance to the laboring class; it is not the amount even of the funds destined for distribution among the laborers: it is the proportion between those funds and the numbers among whom they are shared. The condition of the class can be bettered in no other way than by altering that proportion to their advantage; and every scheme for their benefit which does not proceed on this as its foundation is, for all permanent purposes, a delusion" (Mill's Principles of Political Economy, 1849, Vol. I, p. 425). See also Vol. II, pp. 264, 265, and M'Culloch's Political Economy, pp. 379, 380. Ricardo, in his Essay on the Influence of a Low Price of Corn, has stated, with his usual terseness, the three possible forms of this question: "The rise or fall of wages is common to all states of society, whether it be the stationary, the advancing, or the retrograde state. In the stationary state, it is regulated wholly by the increase or falling off of the population. In the advancing state, it depends on whether the capital or the population advance at the more rapid course. In the retrograde state, it depends on whether population or capital decrease with the greater rapidity" (Ricardo's Works, p. 379).

and in the other scarce and dear, the population of the former country will inevitably increase more rapidly than the population of the latter.[1] And, by a parity of reasoning, the average rate of wages will be lower in the former than in the latter, simply because the labor market will be more amply stocked.[2] An inquiry, therefore, into the physical laws on which the food of different countries depends is, for our present purpose, of the greatest importance; and fortunately it is one respecting which we are able, in the present state of chemistry and physiology, to arrive at some precise and definite conclusions.

The food consumed by man produces two, and only two, effects necessary to his existence. These are, first, to supply him with that animal heat without which the functions of life would stop; and, secondly, to repair the waste constantly taking place in his tissues, that is, in the mechanism of his frame. For each of these separate purposes there is a separate food. The temperature of our bodies is kept up by substances which contain no nitrogen, and are called nonazotized; the incessant decay in our organism is repaired by what are known as azotized substances, in which nitrogen is always found.[3] In the former case, the carbon of nonazotized food combines with the oxygen we take in, and gives rise to that internal combustion by which our animal heat is renewed. In the latter case, nitrogen having little affinity for

[1] The standard of comfort being of course supposed the same.

[2] "No point is better established than that the supply of laborers will always ultimately be in proportion to the means of supporting them" (Principles of Political Economy, chap. xxi, in Ricardo's Works, p. 176). Compare Smith's Wealth of Nations, Book I, chap. xi, p. 86, and M'Culloch's Political Economy, p. 222.

[3] The division of food into azotized and nonazotized is said to have been first pointed out by Magendie. See Muller's Physiology, Vol. I, p. 525. It is now recognized by most of the best authorities. See, for instance, Liebig's Animal Chemistry, p. 134; Carpenter's Human Physiology, p. 685; Brande's Chemistry, 1870, Vol. II, pp. 1218. The first tables of food constructed according to it were by Boussingault; see an elaborate essay by Messrs. Lawes and Gilbert on "The Composition of Foods," in *Report of British Association for 1852*, p. 323; but the experiments made by these gentlemen are neither numerous nor diversified enough to establish a general law; still less can we accept their singular assertion, page 346, that the comparative prices of different foods are a test of the nutriment they comparatively contain.

oxygen,[1] the nitrogenous or azotized food is, as it were, guarded against combustion;[2] and being thus preserved, is able to perform its duty of repairing the tissues, and supplying those losses which the human organism constantly suffers in the wear and tear of daily life.

These are the two great divisions of food;[3] and if we inquire into the laws which regulate the relation they bear to man, we shall find that in each division the most important agent is climate. When men live in a hot country their animal heat is more easily kept up than when they live in a cold one; therefore they require a smaller amount of that nonazotized food, the sole business of which is to maintain at a certain point the temperature of the body. In the same way, in the hot country, they require a smaller amount of azotized food, because on the whole their bodily exertions are less frequent, and on that account the decay of their tissues is less rapid.[4]

[1] "Of all the elements of the animal body, nitrogen has the feeblest attraction for oxygen; and, what is still more remarkable, it deprives all combustible elements with which it combines, to a greater or less extent, of the power of combining with oxygen, that is, of undergoing combustion" (Liebig's Letters on Chemistry, p. 372).

[2] The doctrine of what may be called the protecting power of some substances is still imperfectly understood, and, until late in the eighteenth century, its existence was hardly suspected. It is now known to be connected with the general theory of poisons. See Turner's Chemistry, Vol. I, p. 516. To this we must probably ascribe the fact, that several poisons, which are fatal when applied to a wounded surface, may be taken into the stomach with impunity (Brodie's Physiological Researches, 1851, pp. 137, 138). It seems more reasonable to refer this to chemical laws than to hold, with Sir Benjamin Brodie, that some poisons "destroy life by paralyzing the muscles of respiration without immediately affecting the action of the heart."

[3] Prout's well-known division into saccharine, oily, and albuminous appears to me of much inferior value, though I observe that it is adopted in the last edition of Elliotson's Human Physiology, pp. 65, 160. The division by M. Lepelletier into "les aliments solides et les boissons" is of course purely empirical (Lepelletier, Physiologie Médicale, Vol. II, p. 100, Paris, 1832). In regard to Prout's classification, compare Burdach, Traité de Physiologie, Vol. IX, p. 240, with Wagner's Physiology, p. 452.

[4] The evidence of an universal connection in the animal frame between exertion and decay is now almost complete. In regard to the muscular system, see Carpenter's Human Physiology, 1846, pp. 440, 441, 581: "There is strong reason to believe the waste or decomposition of the muscular tissue to be in exact proportion to the degree in which it is exerted." This perhaps would be generally

Since, therefore, the inhabitants of hot climates do, in their natural and ordinary state, consume less food than the inhabitants of cold ones, it inevitably follows that, provided other things remain equal, the growth of population will be more rapid in countries which are hot than in those which are cold. For practical purposes it is immaterial whether the greater plenty of a substance by which the people are fed arises from a larger supply, or whether it arises from a smaller consumption. When men eat less, the result will be just the same as if they had more, because the same amount of nutriment will go further, and thus population will gain a power of increasing more quickly than it could do in a colder country, where, even if provisions were equally abundant, they, owing to the climate, would be sooner exhausted.

This is the first point of view in which the laws of climate are, through the medium of food, connected with the laws of population, and therefore with the laws of the distribution of wealth. But there is also another point of view, which follows the same line of thought and will be found to strengthen the argument just stated. This is, that in cold countries not only are men compelled to eat more than in hot ones, but their food is dearer, — that is to say, to get it is more difficult, and requires a greater expenditure of labor. The reason of this I will state as briefly as possible, without entering into any details beyond those which are absolutely necessary for a right understanding of this interesting subject.

The objects of food are, as we have seen, only two, namely: to keep up the warmth of the body, and repair the waste in the

anticipated even in the absence of direct proof; but what is more interesting is that the same principle holds good of the nervous system. The human brain of an adult contains about one and a half per cent of phosphorus; and it has been ascertained that after the mind has been much exercised phosphates are excreted, and that in the case of inflammation of the brain their excretion (by the kidneys) is very considerable. See Paget's Lectures on Surgical Pathology, 1853, Vol. I, pp. 6, 7, 434; Carpenter's Human Physiology, pp. 192, 193, 222; Simon's Animal Chemistry, Vol. II, p. 426; Henle, Anatomie Générale, Vol. II, p. 172. The reader may also consult, respecting the phosphorus of the brain, the recent very able work of MM. Robin et Verdeil, Chimie Anatomique, Vol. I, p. 215; Vol. II, p. 348, Paris, 1853. According to these writers (Vol. III, p. 445), its existence in the brain was first announced by Hensing, in 1779.

tissues.[1] Of these two objects, the former is effected by the oxygen of the air entering our lungs, and, as it travels through the system, combining with the carbon which we take in our food.[2] This combination of oxygen and carbon never can occur without producing a considerable amount of heat, and it is in this way that the human frame is maintained at its necessary

[1] Though both objects are equally essential, the former is usually the more pressing; and it has been ascertained by experiment, what we should expect from theory, that when animals are starved to death there is a progressive decline in the temperature of their bodies; so that the proximate cause of death by starvation is not weakness, but cold. See Williams' Principles of Medicine, p. 36; and on the connection between the loss of animal heat and the appearance of *rigor mortis* in the contractile parts of the body, see Vogel's Pathological Anatomy of the Human Body, p. 532. Compare the important and thoughtful work of Burdach, Physiologie comme Science d'Observation, Vol. V, pp. 144, 436; Vol. IX, p. 231.

[2] Until the last twenty or five and twenty years, it used to be supposed that this combination took place in the lungs; but more careful experiments have made it probable that the oxygen unites with the carbon in the circulation, and that the blood corpuscles are the carriers of the oxygen. Compare Liebig's Animal Chemistry, p. 78; Letters on Chemistry, pp. 335, 336; Turner's Chemistry, Vol. II, p. 1319; Müller's Physiology, Vol. I, pp. 92, 159. That the combination does not take place in the air cells is moreover proved by the fact that the lungs are not hotter than other parts of the body. See Müller, Vol. I, p. 348; Thomson's Animal Chemistry, p. 633; and Brodie's Physiological Researches, p. 33. Another argument in favor of the red corpuscles being the carriers of oxygen is that they are most abundant in those classes of vertebrata which maintain the highest temperature; while the blood of invertebrata contains very few of them; and it has been doubted if they even exist in the lower articulata and mollusca. See Carpenter's Human Physiology, pp. 109, 532; Grant's Comparative Anatomy, p. 472; Elliotson's Human Physiology, p. 159. In regard to the different dimensions of corpuscles, see Henle, Anatomie Générale, Vol. I, pp. 457–467, 494, 495; Blainville, Physiologie Comparée, Vol. I, pp. 298, 299, 301–304; Milne-Edwards, Zoologie, Part I, pp. 54–56; *Fourth Report of British Association*, pp. 117, 118; Simon's Animal Chemistry, Vol. I, pp. 103, 104; and, above all, the important observations of Mr. Gulliver (Carpenter, pp. 105, 106). These additions to our knowledge, besides being connected with the laws of animal heat and of nutrition, will, when generalized, assist speculative minds in raising pathology to a science. In the meantime I may mention the relation between an examination of the corpuscles and the theory of inflammation which Hunter and Broussais were unable to settle: this is, that the proximate cause of inflammation is the obstruction of the vessels by the adhesion of the pale corpuscles. Respecting this striking generalization, which is still on its trial, compare Williams' Principles of Medicine, 1848, pp. 258–265, with Paget's Surgical Pathology, 1853, Vol. I, pp. 313–317; Jones and Sieveking's Pathological Anatomy, 1854, pp. 28, 105, 106. The difficulties connected with the scientific study of inflammation are evaded in Vogel's Pathological Anatomy, p. 418; a work which appears to me to have been greatly overrated.

temperature.[1] By virtue of a law familiar to chemists, carbon and oxygen, like all other elements, will only unite in certain definite proportions;[2] so that to keep up a healthy balance, it is needful that the food which contains the carbon should vary according to the amount of oxygen taken in; while it is equally needful that we should increase the quantity of both of these constituents whenever a greater external cold lowers the temperature of the body. Now it is obvious that in a very cold climate this necessity of providing a nutriment more highly carbonized will arise in two distinct ways. In the first place, the air being denser, men imbibe at each inspiration a greater volume of oxygen than they would do in a climate where the air is rarefied by heat.[3] In the second place, cold accelerates their respiration, and thus obliging them to inhale more frequently than the inhabitants of hot countries, increases the amount of oxygen which they on an average take in.[4] On both these grounds the consumption of oxygen

[1] On the amount of heat disengaged by the union of carbon and oxygen, see the experiments of Dulong, in Liebig's Animal Chemistry, p. 44; and those of Despretz, in Thomson's Animal Chemistry, p. 634. Just in the same way we find that the temperature of plants is maintained by the combination of oxygen with carbon: see Balfour's Botany, pp. 231, 232, 322, 323. As to the amount of heat caused generally by chemical combination, there is an essay well worth reading by Dr. Thomas Andrews in *Report of British Association for 1849*, pp. 63–78. See also *Report for 1852, Transactions of Sections*, p. 40, and Liebig and Kopp's Reports on the Progress of Chemistry, Vol. I, p. 34; Vol. III, p. 16; Vol. IV, p. 20; also Pouillet, Éléments de Physique, Paris, 1832, Vol. I, Part I, p. 411.

[2] The law of definite proportions, which, since the brilliant discoveries by Dalton, is the corner stone of chemical knowledge, is laid down with admirable clearness in Turner's Elements of Chemistry, Vol. I, pp. 146–151. Compare Brande's Chemistry, Vol. I, pp. 139–144; Cuvier, Progrès des Sciences, Vol. II, p. 255; Somerville's Connection of the Sciences, pp. 120, 121. But none of these writers have considered the law so philosophically as M. A. Comte, Philosophie Positive, Vol. III, pp. 133–176, one of the best chapters in his very profound but ill-understood work.

[3] "Ainsi, dans des temps égaux, la quantité d'oxygène consommée par le même animal est d'autant plus grande que la température ambiante est moins élevée" (Robin et Verdeil, Chimie Anatomique, Vol. II, p. 44). Compare Simon's Lectures on Pathology, 1850, p. 188, for the diminished quantity of respiration in a high temperature; though one may question Mr. Simon's inference that *therefore* the blood is more venous in hot countries than in cold ones. This is not making allowance for the difference of diet, which corrects the difference of temperature.

[4] "The consumption of oxygen in a given time may be expressed by the number of respirations." Liebig's Letters on Chemistry, p. 314; and Thomson's

becomes greater; it is therefore requisite that the consumption of carbon should also be greater, since by the union of these two elements in certain definite proportions the temperature of the body and the balance of the human frame can alone be maintained.

Proceeding from these chemical and physiological principles, we arrive at the conclusion that the colder the country is in which a people live, the more highly carbonized will be their food. And this, which is a purely scientific inference, has been verified by actual experiment. The inhabitants of the polar regions consume large quantities of whale oil and blubber; while within the tropics such food would soon put an end to life, and therefore the ordinary diet consists almost entirely of fruit, rice, and other vegetables. Now it has been ascertained by careful analysis that in the polar food there is an excess of carbon; in the tropical food, an excess of oxygen. Without entering into details, which to the majority of readers would be distasteful, it may be said generally that the oils contain about six times as much carbon as the fruits, and that they have in them very little oxygen;[1]

Animal Chemistry, p. 611. It is also certain that exercise increases the number of respirations; and birds, which are the most active of all animals, consume more oxygen than any others. Milne-Edwards, Zoologie, Part I, p. 88; Part II, p. 371; Flourens, Travaux de Cuvier, pp. 153, 154, 265, 266. Compare, on the connection between respiration and the locomotive organs, Beclard, Anatomie Générale, pp. 39, 44; Burdach, Traité de Physiologie, Vol. IX, pp. 485, 556–559; Carus' Comparative Anatomy, Vol. I, pp. 99, 164, 358; Vol. II, pp. 142, 160; Grant's Comparative Anatomy, pp. 455, 495, 522, 529, 537; Rymer Jones' Animal Kingdom, pp. 369, 440, 692, 714, 720; Owen's Invertebrata, pp. 322, 345, 386, 505. Thus, too, it has been experimentally ascertained that in human beings exercise increases the amount of carbonic acid gas (Mayo's Human Physiology, p. 64; Liebig and Kopp's Reports, Vol. III, p. 359).

If we now put these facts together, their bearing on the propositions in the text will become evident, because, on the whole, there is more exercise taken in cold climates than in hot ones, and there must therefore be an increased respiratory action. For proof that greater exercise is both taken and required, compare Wrangel's Polar Expedition, pp. 79, 102; Richardson's Arctic Expedition, Vol. I, p. 385; Simpson's North Coast of America, pp. 49, 88, which should be contrasted with the contempt for such amusements in hot countries. Indeed, in polar regions all this is so essential to preserve a normal state that scurvy can only be kept off in the northern part of the American continent by taking considerable exercise. See Crantz' History of Greenland, Vol. I, pp. 46, 62, 338.

[1] "The fruits used by the inhabitants of southern climes do not contain, in a fresh state, more than 12 per cent of carbon; while the blubber and train oil which

while starch, which is the most universal and, in reference to nutrition, the most important constituent in the vegetable world,[1] is nearly half oxygen.[2]

The connection between this circumstance and the subject before us is highly curious; for it is a most remarkable fact, and one to which I would call particular attention, that owing to some more general law, of which we are ignorant, highly carbonized food is more costly than food in which comparatively little carbon is found. The fruits of the earth, of which oxygen is the most active principle, are very abundant; they may be obtained without danger, and almost without trouble. But that highly carbonized food which in a very cold climate is absolutely necessary to life is not produced in so facile and spontaneous a manner. It is not, like vegetables, thrown up by the soil; but it consists of the fat, the blubber, and the oil[3] of powerful and ferocious animals. To procure it, man must incur great risk and

feed the inhabitants of polar regions contain 66 to 80 per cent of that element" (Liebig's Letters on Chemistry, p. 320; also p. 375, and Turner's Chemistry, Vol. II, p. 1315). According to Prout (Mayo's Human Physiology, p. 136), "the proportion of carbon in oily bodies varies from about 60 to 80 per cent." The quantity of oil and fat habitually consumed in cold countries is remarkable. Wrangel (Polar Expedition, p. 21) says of the tribes in the northeast of Siberia: "Fat is their greatest delicacy. They eat it in every possible shape, — raw, melted, fresh, or spoilt." See also Simpson's Discoveries on the North Coast of America, pp. 147, 404.

[1] "So common that no plant is destitute of it" (Lindley's Botany, Vol. I, p. 111); and at page 121, "Starch is the most common of all vegetable productions." Dr. Lindley adds (Vol. I, p. 292), that it is difficult to distinguish the grains of starch secreted by plants from cytoblasts. See also on the starch granules, first noticed by M. Link, *Reports on Botany by the Ray Society*, pp. 223, 370; and respecting its predominance in the vegetable world, compare Thomson's Chemistry of Vegetables, pp. 650–652, 875; Brande's Chemistry, Vol. II, p. 1160; Turner's Chemistry, Vol. II, p. 1236; Liebig and Kopp's Reports, Vol. II, pp. 97, 98, 122.

[2] The oxygen is 49.39 out of 100. See the table in Liebig's Letters on Chemistry, p. 379. Amidin, which is the soluble part of starch, contains 53.33 per cent of oxygen. See Thomson's Chemistry of Vegetables, p. 654, on the authority of Prout, who has the reputation of being an accurate experimenter.

[3] Of which a single whale will yield "cent vingt tonneaux" (Cuvier, Règne Animal, Vol. I, p. 297). In regard to the solid food, Sir J. Richardson (Arctic Expedition, 1851, Vol. I, p. 243) says that the inhabitants of the Arctic regions only maintain themselves by chasing whales and "consuming blubber."

expend great labor. And although this is undoubtedly a contrast of extreme cases, still it is evident that the nearer a people approach to either extremity, the more subject will they be to the conditions by which that extremity is governed. It is evident that, as a general rule, the colder a country is, the more its food will be carbonized; the warmer it is, the more its food will be oxidized.[1] At the same time, carbonized food, being chiefly drawn from the animal world, is more difficult to obtain than oxidized food, which is drawn from the vegetable world.[2] The result has been that among nations where the coldness of the climate renders a highly carbonized diet essential, there is for the most part displayed, even in the infancy of society, a bolder and more adventurous character than we find among those other nations whose ordinary nutriment, being highly oxidized, is easily obtained, and indeed is supplied to them by the bounty of nature, gratuitously and without a struggle.[3] From this original divergence there follow many other consequences, which, however, I am not now concerned to trace; my present object being

[1] It is said that to keep a person in health his food, even in the temperate parts of Europe, should contain "a full eighth more carbon in winter than in summer" (Liebig's Animal Chemistry, p. 16).

[2] The most highly carbonized of all foods are undoubtedly yielded by animals; the most highly oxidized, by vegetables. In the vegetable kingdom there is, however, so much carbon that its predominance, accompanied with the rarity of nitrogen, has induced chemical botanists to characterize plants as carbonized, and animals as azotized. But we have here to attend to a double antithesis. Vegetables are carbonized in so far as they are nonazotized; but they are oxidized in opposition to the highly carbonized animal food of cold countries. Besides this, it is important to observe that the carbon of vegetables is most abundant in the woody and unnutritious part, which is not eaten; while the carbon of animals is found in the fatty and oily parts, which are not only eaten, but are, in cold countries, greedily devoured.

[3] Sir J. Malcolm (History of Persia, Vol. II, p. 380), speaking of the cheapness of vegetables in the East, says, "In some parts of Persia fruit has hardly any value." Cuvier, in a striking passage (Règne Animal, Vol. I, pp. 73, 74), has contrasted vegetable with animal food, and thinks that the former, being so easily obtained, is the more natural. But the truth is that they are equally natural, though when Cuvier wrote scarcely anything was known of the laws which govern the relation between climate and food. On the skill and energy required to obtain food in cold countries, see Wrangel's Polar Expedition, pp. 70, 71, 191, 192; Simpson's Discoveries on the North Coast of America, p. 249; Crantz' History of Greenland, Vol. I, pp. 22, 32, 105, 131, 154, 155; Vol. II, pp. 203, 265, 324.

merely to point out how this difference of food affects the proportion in which wealth is distributed to the different classes.

The way in which this proportion is actually altered has, I hope, been made clear by the preceding argument. But it may be useful to recapitulate the facts on which the argument is based. The facts, then, are simply these. The rate of wages fluctuates with the population, increasing when the labor market is undersupplied, diminishing when it is oversupplied. The population itself, though affected by many other circumstances, does undoubtedly fluctuate with the supply of food, advancing when the supply is plentiful, halting or receding when the supply is scanty. The food essential to life is scarcer in cold countries than in hot ones; and not only is it scarcer, but more of it is required;[1] so that on both grounds smaller encouragement is given to the growth of that population from whose ranks the labor market is stocked. To express, therefore, the conclusion in its simplest form, we may say that there is a strong and constant tendency in hot countries for wages to be low, in cold countries for them to be high.

Applying now this great principle to the general course of history, we shall find proofs of its accuracy in every direction. Indeed, there is not a single instance to the contrary. In Asia, in Africa, and in America all the ancient civilizations were seated in hot climates; and in all of them the rate of wages was very low, and therefore the condition of the laboring classes very depressed. In Europe, for the first time, civilization arose

[1] Cabanis (Rapports du Physique et du Moral, p. 313) says, "Dans les temps et dans les pays froids on mange et l'on agit davantage." That much food is eaten in cold countries, and little in hot ones, is mentioned by numerous travelers, none of whom are aware of the cause. See Simpson's Discoveries on the North Coast of America, p. 218; Custine, Russie, Vol. IV, p. 66; Wrangel's Expedition, pp. 21, 327; Crantz' History of Greenland, Vol. I, pp. 145, 360; Richardson's Central Africa, Vol. II, p. 46; Richardson's Sahara, Vol. I, p. 137; Denham's Africa, p. 37; *Journal of Asiatic Society*, Vol. V, p. 144; Vol. VIII, p. 188; Burckhardt's Travels in Arabia, Vol. II, p. 265; Niebuhr, Description de l'Arabie, p. 45; Ulloa's Voyage to South America, Vol. I, pp. 403, 408; *Journal of Geographical Society*, Vol. III, p. 283; Vol. VI, p. 85; Vol. XIX, p. 121; Spix and Martius' Travels in Brazil, Vol. I, p. 164; Southey's History of Brazil, Vol. III, p. 848; Volney, Voyage en Syrie et en Égypte, Vol. I, pp. 379, 380, 460; Low's Sarawak, p. 140.

in a colder climate; hence the reward of labor was increased, and the distribution of wealth rendered more equal than was possible in countries where an excessive abundance of food stimulated the growth of population. This difference produced, as we shall presently see, many social and political consequences of immense importance. But before discussing them, it may be remarked that the only apparent exception to what has been stated is one which strikingly verifies the general law. There is one instance, and only one, of a great European people possessing a very cheap national food. This people, I need hardly say, is the Irish. In Ireland the laboring classes have for more than two hundred years been principally fed by potatoes, which were introduced into their country late in the sixteenth, or early in the seventeeth, century.[1] Now the peculiarity of the potato is, that until the appearance of the late disease it was, and perhaps still is, cheaper than any other food equally wholesome. If we compare its reproductive power with the amount of nutriment contained in it, we find that one acre of average land sown with potatoes will support twice as many persons as the same quantity of land sown with wheat.[2] The consequence is, that in a country where men live on potatoes the population will, if other things are tolerably equal, increase twice as fast as in a country where they live on wheat. And so it has actually occurred. Until a

[1] Meyen (Geography of Plants, 1846, p. 313) says that the potato was introduced into Ireland in 1586; but according to Mr. M'Culloch (Dictionary of Commerce, 1849, p. 1048), "potatoes, it is commonly thought, were not introduced into Ireland till 1610, when a small quantity was sent by Sir Walter Raleigh to be planted in a garden on his estate in the vicinity of Youghal." Compare Loudon's Encyclopædia of Agriculture, p. 845: "first planted by Sir Walter Raleigh on his estate of Youghal, near Cork."

[2] Adam Smith (Wealth of Nations, Book I, chap. xi, p. 67) supposes that it will support three times as many; but the statistics of this great writer are the weakest part of his work, and the more careful calculations made since he wrote bear out the statement in the text. "It admits of demonstration that an acre of potatoes will feed double the number of people that can be fed from an acre of wheat" (Loudon's Encyclopædia of Agriculture, 5th ed., 1844, p. 845). So, too, in M'Culloch's Dictionary, p. 1048, "an acre of potatoes will feed double the number of individuals that can be fed from an acre of wheat." The daily average consumption of an able-bodied laborer in Ireland is estimated at nine and a half pounds of potatoes for men and seven and a half for women. See Phillips on Scrofula, 1846, p. 177.

very few years ago, when the face of affairs was entirely altered by pestilence and emigration, the population of Ireland was, in round numbers, increasing annually three per cent; the population of England during the same period increasing one and a half per cent.[1] The result was that in these two countries the distribution of wealth was altogether different. Even in England the growth of population is somewhat too rapid; and the labor market being overstocked, the working classes are not sufficiently paid for their labor.[2] But their condition is one of sumptuous splendor compared to that in which only a few years ago the Irish were forced to live. The misery in which they were plunged has no doubt always been aggravated by the ignorance of their rulers, and by that scandalous misgovernment which, until very recently, formed one of the darkest blots on the glory of England. The most active cause, however, was that their wages were so low as to debar them, not only from the comforts but from the common decencies of civilized life; and this evil condition was the natural result of that cheap and abundant food, which encouraged the people to so rapid an increase that the labor market was constantly gorged.[3] So far was this carried that an intelligent observer who traveled through Ireland twenty years ago mentions that at that time the average wages were fourpence a day; and that even this wretched pittance could not always be relied upon for regular employment.[4]

[1] Malthus' Essay on Population, Vol. I, pp. 424, 425, 431, 435, 441, 442; M'Culloch's Political Economy, pp. 381, 382.

[2] The lowest agricultural wages in our time have been in England about 1 *s.* a day; while from the evidence collected by Mr. Thornton in 1845, the highest wages then paid were in Lincolnshire, and were rather more than 13 *s.* a week; those in Yorkshire and Northumberland being nearly as high (Thornton on Over-Population, pp. 12–15, 24, 25). Godwin, writing in 1820, estimates the average at 1 *s.* 6 *d.* a day (Godwin on Population, p. 573). Mr. Phillips, in his work on Scrofula, 1846, p. 345, says, "At present the ratio of wages is from 9 *s.* to 10 *s.*"

[3] The most miserable part, namely Connaught, in 1733 contained 242,160 inhabitants; and in 1821, 1,110,229. See Sadler's Law of Population, Vol. II, p. 490.

[4] Mr. Inglis, who in 1834 traveled through Ireland with a particular view to its economical state, says, as the result of very careful inquiries, "I am quite confident that if the whole yearly earnings of the laborers of Ireland were divided by the whole number of laborers, the result would be under this sum —*fourpence* a

Such have been the consequences of cheap food in a country which, on the whole, possesses greater natural resources than any other in Europe.[1] And if we investigate on a larger scale the social and economical conditions of nations, we shall see the same principle everywhere at work. We shall see that, other things remaining equal, the food of a people determines the increase of their numbers, and the increase of their numbers determines the rate of their wages. We shall moreover find that when the wages are invariably low,[2] the distribution of wealth being thus very unequal, the distribution of political power and social influence will also be very unequal; in other words, it will appear that the normal and average relation between the upper and lower classes will, in its origin, depend upon those peculiarities of

day for the laborers of Ireland" (Inglis' Journey throughout Ireland in 1834, London, 1835, 2d ed. Vol. II, p. 300). At Balinasloe, in the county of Galway, "A gentleman with whom I was accidentally in company offered to procure, on an hour's warning, a couple of hundred laborers at fourpence even for temporary employment" (Inglis, Vol. II, p. 17). The same writer says (Vol. I, p. 263), that at Tralee "it often happens that the laborers, after working in the canal from five in the morning until eleven in the forenoon, are discharged for the day with the pittance of twopence." Compare, in Cloncurry's Recollections, Dublin, 1849, p. 310, a letter from Dr. Doyle written in 1829, describing Ireland as "a country where the market is always overstocked with labor, and in which a man's labor is not worth, at an average, more than threepence a day."

[1] It is singular that so acute a thinker as Mr. Kay should, in his otherwise just remarks on the Irish, entirely overlook the effect produced on their wages by the increase of population (Kay's Social Condition of the People, Vol. I, pp. 8, 9, 92, 223, 306–324). This is the more observable because the disadvantages of cheap food have been noticed not only by several common writers but by the highest of all authorities on population, Mr. Malthus: see the sixth edition of his Essay on Population, Vol. I, p. 469; Vol. II, pp. 123, 124, 383, 384. If these things were oftener considered, we should not hear so much about the idleness and levity of the Celtic race; the simple fact being that the Irish are unwilling to work, not because they are Celts but because their work is badly paid. When they go abroad they get good wages, and therefore they become as industrious as any other people. Compare *Journal of Statistical Society*, Vol. VII, p. 24, with Thornton on Over-Population, p. 425; a very valuable work. Even in 1799 it was observed that the Irish as soon as they left their own country became industrious and energetic. See Parliamentary History, Vol. XXXIV, p. 222. So, too, in North America, "they are most willing to work hard" (Lyell's Second Visit to the United States, 1849, Vol. I, p. 187).

[2] By low wages I mean low reward of labor, which is of course independent both of the cost of labor and of the money rate of wages.

nature, the operations of which I have endeavored to indicate.[1] After putting all these things together, we shall, I trust, be able to discern, with a clearness hitherto unknown, the intimate connection between the physical and moral world; the laws by which that connection is governed; and the reasons why so many ancient civilizations reached a certain stage of development, and then fell away, unable to resist the pressure of nature, or make head against those external obstacles by which their progress was effectually retarded.

If, in the first place, we turn to Asia, we shall see an admirable illustration of what may be called the collision between internal and external phenomena. Owing to circumstances already stated, Asiatic civilization has always been confined to that rich tract where alone wealth could be easily obtained. This immense zone comprises some of the most fertile parts of the globe; and

[1] In a recent work of considerable ingenuity (Doubleday's True Law of Population, 1847, pp. 25–29, 69, 78, 123, 124, etc.) it is noticed that countries are more populous when the ordinary food is vegetable than when it is animal; and an attempt is made to explain this on the ground that a poor diet is more favorable to fecundity than a rich one. But though the fact of the greater increase of population is indisputable, there are several reasons for being dissatisfied with Mr. Doubleday's explanation.

First. That the power of propagation is heightened by poor living is a proposition which has never been established physiologically; while the observations of travelers and of governments are not sufficiently numerous to establish it statistically.

Second. Vegetable diet is as generous for a hot country as animal diet is for a cold country; and since we know that, notwithstanding the difference of food and climate, the temperature of the body varies little between the equator and the poles (compare Liebig's Animal Chemistry, p. 19; Holland's Medical Notes, p. 473; Pouillet, Éléments de Physique, Vol. I, Part I, p. 414; Burdach, Traité de Physiologie, Vol. IX, p. 663), we have no reason to believe that there is any other normal variation, but should rather suppose that, in regard to all essential functions, vegetable diet and external heat are equivalent to animal diet and external cold.

Third. Even conceding, for the sake of argument, that vegetable food increases the procreative power, this would only affect the number of births, and not the density of population; for a greater number of births may be, and often is, remedied by a greater mortality; a point in regard to which Godwin, in trying to refute Malthus, falls into serious error (Godwin on Population, p. 317).

Since writing the above I have found that these views of Mr. Doubleday's were in a great measure anticipated by Fourier. See Rey, Science Sociale, Vol. I, p. 185.

of all its provinces, Hindustan is certainly the one which for the longest period has possessed the greatest civilization.[1] And as the materials for forming an opinion respecting India are more ample than those respecting any other part of Asia,[2] I purpose to select it as an example, and use it to illustrate those laws which, though generalized from political economy, chemistry, and physiology, may be verified by that more extensive survey the means of which history alone can supply.

In India the great heat of the climate brings into play that law, already pointed out, by virtue of which the ordinary food is of an oxygenous rather than of a carbonaceous character. This, according to another law, obliges the people to derive their usual diet not from the animal but from the vegetable world, of which starch is the most important constituent. At the same time the high temperature, incapacitating men for arduous labor, makes necessary a food of which the returns will be abundant, and which will contain much nutriment in a comparatively small space. Here, then, we have some characteristics, which, if the preceding views are correct, ought to be found in the ordinary food of the Indian nations. So they all are. From the earliest period the most general food in India has been rice,[3] which is the

[1] I use the word "Hindustan" in the popular sense, as extending south to Cape Comorin, though, properly speaking, it only includes the country north of the Nerbudda. Compare Mill's History of India, Vol. II, p. 178; Bohlen, Das alte Indien, Vol. I, p. 11; Meiners, Über die Länder in Asien, Vol. I, p. 224. The word itself is not found in the old Sanskrit, and is of Persian origin. Halhed's Preface to the Gentoo Laws, pp. xx, xxi; Asiatic Researches, Vol. III, pp. 368, 369.

[2] So that, in addition to works published on their philosophy, religion, and jurisprudence, a learned geographer stated several years ago, that "kein anderes asiatisches Reich ist in den letzten drei Jahrhunderten von so vielen und so einsichtsvollen Europäern durchreist und beschrieben worden, als Hindostan" (Meiners, Länder in Asien, Vol. I, p. 225). Since the time of Meiners such evidence has become still more precise and extensive, and is, I think, too much neglected by M. Rhode in his valuable work on India. "Dem Zwecke dieser Arbeit gemäss, betrachten wir hier nur Werke der Hindus selbst, oder Auszüge aus denselben als Quellen" (Rhode, Die Religiöse Bildung der Hindus, Vol. I, p. 43).

[3] This is evident from the frequent and familiar mention of it in that remarkable relic of antiquity, the Institutes of Manu. See the Institutes, in Works of Sir W. Jones, Vol. III, pp. 87, 132, 156, 200, 215, 366, 406, 403, 434. Thus, too, in the enumeration of foods in Vishnu Purana, pp. 46, 47, rice is the first mentioned. See further evidence in Bohlen, Das alte Indien, Vol. I, p. 22; Vol. II,

most nutritive of all the cerealia;[1] which contains an enormous proportion of starch;[2] and which yields to the laborer an average return of at least sixty fold.[3]

Thus possible is it, by the application of a few physical laws, to anticipate what the national food of a country will be, and therefore to anticipate a long train of ulterior consequences. What in this case is no less remarkable is that though, in the south of the peninsula, rice is not so much used as formerly, it has been replaced not by animal food but by another grain called ragi.[4] The original rice, however, is so suited to the circumstances I have described that it is still the most general food of nearly all the hottest countries of Asia,[5] from

pp. 159, 160; Wilson's Theatre of the Hindus, Vol. I, Part II, pp. 15, 16, 37, 92, 95; Vol. II, Part II, p. 35, Part III, p. 64; "Notes on the Mahabharata," in *Journal of Asiatic Society*, Vol. VII, p. 141; Travels of Ibn Batuta in Fourteenth Century, p. 164; Colebrooke's Digest of Hindu Law, Vol. I, p. 499; Vol. II, pp. 44, 48, 436, 569; Vol. III, pp. 11, 148, 205–207, 266, 364, 530; Asiatic Researches, Vol. VII, pp. 299, 302; Ward on the Hindoos, Vol. I, p. 209; Vol. III, p. 105.

[1] "It contains a greater proportion of nutritious matter than any of the cerealia" (Somerville's Physical Geography, Vol. II, p. 202).

[2] It contains from 83.8 to 85.07 per cent of starch. Brande's Chemistry, Vol. II, p. 1624; Thomson's Chemistry of Organic Bodies, p. 883.

[3] It is difficult to collect sufficient evidence to strike an average; but in Egypt, according to Savary, rice "produces eighty bushels for one" (Loudon's Encyclopædia of Agriculture, p. 173). In Tenasserim the yield is from eighty to one hundred (Low's History of Tenasserim, in *Journal of Asiatic Society*, Vol. III, p. 29). In South America, two hundred and fifty fold, according to Spix and Martius (Travels in Brazil, Vol. II, p. 79); or from two hundred to three hundred, according to Southey (History of Brazil, Vol. III, pp. 658, 806). The lowest estimate given by M. Meyen is forty fold; the highest, which is marsh rice in the Philippine Islands, four hundred fold (Meyen's Geography of Plants, 1846, p. 301).

[4] Elphinstone's History of India, p. 7. Ragi is the *Cynosurus Coracanus* of Linnæus; and, considering its importance, it has been strangely neglected by botanical writers.

The best account I have seen of it is in Buchanan's Journey through the Countries of Mysore, Canara, and Malabar, Vol. I, pp. 100–104, 285, 286, 375, 376, 403; Vol. II, pp. 103, 104; Vol. III, pp. 239, 240, 296, 297. In the large cities, millet is generally used, of which "a quantity sufficient for two meals may be purchased for about a half-penny" (Gibson on Indian Agriculture, in *Journal of Asiatic Society*, Vol. VIII, p. 100).

[5] Marsden's History of Sumatra, pp. 56, 59; Raffles' History of Java, Vol. I, pp. 39, 106, 119, 129, 240; Percival's Ceylon, pp. 337, 364; *Transactions of Society of Bombay*, Vol. II, p. 155; *Transactions of the Asiatic Society*, Vol. I, p. 510; *Journal of Asiatic Society*, Vol. I, pp. 228, 247; Vol. II, pp. 44, 64, 251, 257, 262, 336, 344;

which at different times it has been transplanted to other parts of the world.[1]

In consequence of these peculiarities of climate and of food, there has arisen in India that unequal distribution of wealth which we must expect to find in countries where the labor market is always redundant.[2] If we examine the earliest Indian records which have been preserved, — records between two and three thousand years old, — we find evidence of a state of things similar to that which now exists, and which, we may rely upon it, always has existed ever since the accumulation of capital once fairly began. We find the upper classes enormously rich, and the lower classes miserably poor. We find those by whose labor the wealth is created receiving the smallest possible share of it, the remainder being absorbed by the higher ranks in the form either of rent or of profit. And as wealth is, after intellect, the most permanent source of power, it has naturally happened that

Vol. III, pp. 8, 25, 300, 340; Vol. IV, pp. 82, 83, 104; Vol. V, pp. 241, 246; Asiatic Researches, Vol. V, pp. 124, 229; Vol. XII, p. 148; Vol. XVI, pp. 171, 172; *Journal of Geographical Society*, Vol. II, p. 86; Vol. III, pp. 124, 295, 300; Vol. V, p. 263; Vol. VIII, pp. 341, 359; Vol. XIX, pp. 132, 137.

[1] Rice, so far as I have been able to trace it, has traveled westward. Besides the historical evidence, there are philological probabilities in favor of its being indigenous to Asia, and the Sanskrit name for it has been very widely diffused. Compare Humboldt's Cosmos, Vol. II, p. 472, with Craufurd's History of the Indian Archipelago, Vol. I, p. 358. In the fourteenth century it was the common food on the Zanguebar coast, and is now universal in Madagascar. Travels of Ibn Batuta in Fourteenth Century, p. 56; Ellis' History of Madagascar, Vol. I, pp. 39, 297–304; Vol. II, p. 292; *Journal of Geographical Society*, Vol. III, p. 212. From Madagascar its seeds were, according to M'Culloch's Dictionary of Commerce, p. 1105, carried to Carolina late in the seventeenth century. It is now cultivated in Nicaragua (Squier's Central America, Vol. I, p. 38) and in South America (Henderson's History of Brazil, pp. 292, 307, 395, 440, 488), where it is said to grow wild. Compare Meyen's Geography of Plants, pp. 291, 297, with Azara, Voyages dans l'Amérique Méridionale, Vol. I, p. 100; Vol. II, p. 80. The ancient Greeks, though acquainted with rice, did not cultivate it; and its cultivation was first introduced into Europe by the Arabs. See Humboldt, Nouvelle Espagne, Vol. II, pp. 409, 410.

[2] So far as food is concerned, Diodorus Siculus notices the remarkable fertility of India, and the consequent accumulation of wealth. See two interesting passages in Bibliothec. Hist., Lib. II, Vol. II, pp. 49, 50, 108, 109. But of the economical laws of distribution, he, like all the ancient writers, was perfectly ignorant.

a great inequality of wealth has been accompanied by a corresponding inequality of social and political power. It is not, therefore, surprising that from the earliest period to which our knowledge of India extends, an immense majority of the people, pinched by the most galling poverty, and just living from hand to mouth, should always have remained in a state of stupid debasement, broken by incessant misfortune, crouching before their superiors in abject submission, and only fit either to be slaves themselves or to be led to battle to make slaves of others.[1]

To ascertain the precise value of the average rate of wages in India for any long period is impossible; because, although the amount might be expressed in money, still the value of money, that is, its purchasing power, is subject to incalculable fluctuations, arising from changes in the cost of production.[2] But, for our present purpose, there is a method of investigation which will lead to results far more accurate than any statement could be that depended merely on a collection of evidence respecting the wages themselves. The method is simply this: that inasmuch as the wealth of a country can only be divided into wages, rent, profits, and interest, and inasmuch as interest is on an average an exact measure of profits,[3] it follows that if among any people rent and interest are both high wages must be low.[4] If, therefore, we

[1] An able and very learned apologist for this miserable people says: "The servility so generally ascribed to the Hindu is never more conspicuous than when he is examined as an evidence. But if it be admitted that he acts as a slave, why blame him for not possessing the virtues of a free man? *The oppression of ages has taught him implicit submission*" (Vans Kennedy, in *Transactions of Society of Bombay*, Vol. III, p. 144). Compare the observations of Charles Hamilton in Asiatic Researches, Vol. I, p. 305.

[2] The impossibility of having a standard of value is clearly pointed out in Turgot, Réflexions sur la Formation et la Distribution des Richesses, in Œuvres, Vol. V, pp. 51, 52. Compare Ricardo's Works, pp. 11, 28–30, 46, 166, 253, 270, 401, with M'Culloch's Principles of Political Economy, pp. 298, 299, 307.

[3] Smith's Wealth of Nations, Book I, chap. ix, p. 37; where, however, the proposition is stated rather too absolutely, since the risks arising from an insecure state of society must be taken into consideration. But that there is an average ratio between interest and profits is obvious, and is distinctly laid down by the Sanskrit jurists. See Colebrooke's Digest of Hindu Law, Vol. I, pp. 72, 81.

[4] Ricardo (Principles of Political Economy, chap. vi, in Works, p. 65) says, "Whatever increases wages, necessarily reduces profits." And in chap. xv, p. 122, "Whatever raises the wages of labor, lowers the profits of stock." In several

can ascertain the current interest of money, and the proportion of the produce of the soil which is absorbed by rent, we shall get a perfectly accurate idea of the wages; because wages are the residue, — that is, they are what is left to the laborers after rent, profits, and interest have been paid.

Now it is remarkable that in India both interest and rent have always been very high. In the Institutes of Manu, which were drawn up about 900 B.C.,[1] the lowest legal interest for money is fixed at fifteen per cent, the highest at sixty per cent.[2] Nor is this to be considered as a mere ancient law now fallen into disuse. So far from that, the Institutes of Manu are still the basis of Indian jurisprudence;[3] and we know on very good authority that in 1810 the interest paid for the use of money varied from thirty-six to sixty per cent.[4]

other places he makes the same assertion, very much to the discomfort of the ordinary reader, who knows that in the United States, for instance, wages and profits are both high. But the ambiguity is in the language, not in the thought; and in these and similar passages Ricardo by wages meant cost of labor, in which sense the proposition is quite accurate. If by wages we mean the reward of labor, then there is no relation between wages and profits: for when rent is low both of them may be high, as is the case in the United States. That this was the view of Ricardo is evident from the following passage: "Profits, it cannot be too often repeated, depend on wages; not on nominal but real wages; not on the number of pounds that may be annually paid to the laborer but on the number of days' work necessary to obtain those pounds" (Political Economy, chap. vii, Ricardo's Works, p. 82). Compare Mill's Principles of Political Economy, Vol. I, p. 509; Vol. II, p. 225.

[1] I take the estimate of Mr. Elphinstone (History of India, pp. 225-228) as midway between Sir William Jones (Works, Vol. III, p. 56) and Mr. Wilson (Rig Veda Sanhita, Vol. I, p. xlvii).

[2] Institutes of Manu, chap. viii, secs. 140-142, in Works of Sir W. Jones, Vol. III, p. 295. The subsequent Sanskrit commentators recognize nearly the same rate of interest, the minimum being fifteen per cent. See Colebrooke's Digest of Hindu Law, Vol. I, pp. 29, 36, 43, 98, 99, 237; Vol. II, p. 70.

[3] In Colebrooke's Digest, Vol. I, p. 454, and Vol. III, p. 229, Manu is called "the highest authority of memorial law" and "the founder of memorial law." The most recent historian of India, Mr. Elphinstone, says (History of India, p. 83), "The code of Menu is still the basis of the Hindu jurisprudence; and the principal features remain unaltered to the present day." This remarkable code is also the basis of the laws of the Burmese, and even of those of the Laos (*Journal of the Asiatic Society*, Vol. II, p. 271; Vol. III, pp. 28, 296, 332; Vol. V, p. 252).

[4] See, in Mill's History of India, Vol. I, p. 317, the report of a committee of the House of Commons in 1810, in which it is stated that the ryots paid "the

Thus much as to one of the elements of our present calculation. As to the other element, namely, the rent, we have information equally precise and trustworthy. In England and Scotland the rent paid by the cultivator for the use of land is estimated in round numbers, taking one farm with another, at a fourth of the gross produce.[1] In France the average proportion is about a third;[2] while in the United States of North America it is well known to be much less, and, indeed, in some parts, to be merely nominal.[3] But in India the legal rent, that is, the lowest rate recognized by the law and usage of the country, is one half of the produce; and even this cruel regulation is not strictly enforced, since in many cases rents are raised so high that the cultivator not only receives less than half the produce but receives so little as to have scarcely the means of providing seed to sow the ground for the next harvest.[4]

The conclusion to be drawn from these facts is manifest. Rent and interest being always very high, and interest varying, as it

heavy interest of three, four, and five per cent per month." Ward, writing about the same time, mentions as much as seventy-five per cent being given, and this apparently without the lender incurring any extraordinary risk (Ward's View of the Hindoos, Vol. II, p. 190).

[1] Compare the table in Loudon's Encyclopædia of Agriculture, p. 778, with Mavor's note in Tusser's Five Hundred Points of Husbandry, p. 195, London, 1812, and M'Culloch's Statistical Account of the British Empire, 1847, Vol. I, p. 560.

[2] This is the estimate I have received from persons well acquainted with French agriculture. The rent, of course, varies in each separate instance, according to the natural powers of the soil, according to the extent to which those powers have been improved, and according to the facilities for bringing the produce to market. But, notwithstanding these variations, there must be in every country an average rent, depending upon the operation of general causes.

[3] Owing to the immense supply of land preventing the necessity of cultivating those inferior soils which older countries are glad to use, and are therefore willing to pay a rent for the right of using, in the United States profits and wages (i.e. the reward of the laborer, not the cost of labor) are both high, which would be impossible if rent were also high.

[4] See Rammohun Roy on the Judicial and Revenue Systems of India, 1832, pp. 59-61, 63, 69, 92, 94. At page 69 this high authority says of the agricultural peasantry of Bengal: "In an abundant season, when the price of corn is low, the sale of their whole crops is required to meet the demands of the landholder, leaving little or nothing for seed or subsistence to the laborer or his family." In Cashmere the sovereign received half the produce of the rice crop, leaving the other half to the cultivator (Moorcroft's Notices of Cashmere, in *Journal of Geographical Society*, Vol. II, p. 266).

must do, according to the rate of profits, it is evident that wages must have been very low; for since there was in India a specific amount of wealth to be divided into rent, interest, profits, and wages, it is clear that the first three could only have been increased at the expense of the fourth; which is saying, in other words, that the reward of the laborers was very small in proportion to the reward received by the upper classes. And though this, being an inevitable inference, does not require extraneous support, it may be mentioned that in modern times, for which alone we have direct evidence, wages have in India always been excessively low, and the people have been, and still are, obliged to work for a sum barely sufficient to meet the exigencies of life.[1]

[1] Heber (Journey through India, Vol. I, pp. 209, 356, 357, 359) gives some curious instances of the extremely low rate at which the natives are glad to work. As to the ordinary wages in India in the present century, see *Journal of Asiatic Society*, Vol. I, p. 255; Vol. V, p. 171; Rammohun Roy on the Judicial and Revenue Systems, pp. 105, 106, Sykes' Statistics of the Deccan, in *Reports of the British Association*, Vol. VI, p. 321; Ward's View of the Hindoos, Vol. III, p. 207; Colebrooke's Digest of Hindu Law, Vol. II, p. 184. On wages in the south of India, the fullest information will be found in Buchanan's valuable work, Journey through the Mysore, Canara, and Malabar, Vol. I, pp. 124, 125, 133, 171, 175, 216, 217, 298, 390, 415; Vol. II, pp. 12, 19, 22, 37, 90, 108, 132, 217, 218, 315, 481, 523, 525, 562; Vol. III, pp. 35, 181, 226, 298, 321, 349, 363, 398, 428, 555. I wish that all travelers were equally minute in recording the wages of labor, — a subject of far greater importance than those with which they usually fill their books.

On the other hand, the riches possessed by the upper classes have, owing to this maldistribution of wealth, been always enormous, and sometimes incredible. See Forbes' Oriental Memoirs, Vol. II, p. 297; Bohlen, Das alte Indien, Vol. II, p. 119; Travels of Ibn Batuta, p. 41; Ward's View of the Hindoos, Vol. III, p. 178. The autobiography of the Emperor Jehangir contains such extraordinary statements of his immense wealth that the editor, Major Price, thinks that some error must have been made by the copyist; but the reader will find in Grote's History of Greece (Vol. XII, pp. 229, 245) evidence of the treasures which it was possible for Asiatic rulers to collect in that state of society. The working of this unequal distribution is thus stated by Mr. Glyn (*Transactions of the Asiatic Society*, Vol. I, p. 482): "The nations of Europe have very little idea of the actual condition of the inhabitants of Hindustan; they are more wretchedly poor than we have any notion of. Europeans have hitherto been too apt to draw their opinions of the wealth of Hindustan from the gorgeous pomp of a few emperors, sultans, nawabs, and rajahs; whereas a more intimate and accurate view of the real state of society would have shown that these princes and nobles were engrossing all the wealth of the country, whilst the great body of the people were earning but a bare subsistence, groaning under intolerable burdens, and hardly able to supply themselves with the necessaries of life, much less with its luxuries."

This was the first great consequence induced in India by the cheapness and abundance of the national food.[1] But the evil by no means stopped there. In India, as in every other country, poverty provokes contempt, and wealth produces power. When other things are equal, it must be with classes of men as with individuals, that the richer they are, the greater the influence they will possess. It was therefore to be expected that the unequal distribution of wealth should cause an unequal distribution of power; and as there is no instance on record of any class possessing power without abusing it, we may easily understand how it was that the people of India, condemned to poverty by the physical laws of their climate, should have fallen into a degradation from which they have never been able to escape. A few instances may be given to illustrate, rather than to prove, a principle which the preceding arguments have, I trust, placed beyond the possibility of dispute.

To the great body of the Indian people the name of Sudras is given;[2] and the native laws respecting them contain some minute and curious provisions. If a member of this despised class presumed to occupy the same seat as his superiors, he was either to be exiled or to suffer a painful and ignominious

[1] Turner, who traveled in 1783 through the northeast of Bengal, says: "Indeed, the extreme poverty and wretchedness of these people will forcibly appear, when we recollect how little is necessary for the subsistence of a peasant in these regions. The value of this can seldom amount to more than one penny per day, even allowing him to make his meal of two pounds of boiled rice, with a due proportion of salt, oil, vegetables, fish, and chili" (Turner's Embassy to Tibet, p. 11). Ibn Batuta, who traveled in Hindustan in the fourteenth century, says: "I never saw a country in which provisions were so cheap" (Travels of Ibn Batuta, p. 194).

[2] The Sudras are estimated by Ward (View of the Hindoos, Vol. III, p. 281) at "three fourths of the Hindoos." At all events, they comprise the whole of the working classes; the Vaisyas not being husbandmen, as they are often called, but landlords, owners of cattle, and traders. Compare Institutes of Manu, chap. ix, secs. 326–333, in Works of Sir W. Jones, Vol. III, pp. 380, 381, with Colebrooke's Digest, Vol. I, p. 15, from which it appears that the Vaisyas were always the masters, and that the Sudra was to "rely on agriculture for his subsistence." The division, therefore, between the "industrious and the servile" (Elphinstone's History of India, p. 12) is too broadly stated; and we must, I think, take the definition of M. Rhode: "Die Kaste der Sudras umfasst die ganze arbeitende, oder um Lohn dienende Classe des Volks" (Die Religiöse Bildung der Hindus, Vol. II, p. 561).

punishment.[1] If he spoke of them with contempt, his mouth was to be burned;[2] if he actually insulted them, his tongue was to be slit;[3] if he molested a Brahmin, he was to be put to death;[4] if he sat on the same carpet with a Brahmin, he was to be maimed for life;[5] if, moved by the desire of instruction, he even listened to the reading of the sacred books, burning oil was to be poured into his ears;[6] if, however, he committed them to memory, he was to be killed;[7] if he were guilty of a crime, the punishment for it was greater than that inflicted on his superiors;[8] but if he himself were murdered, the penalty was the same as for killing a dog, a cat, or a crow.[9] Should he marry his daughter to a Brahmin, no retribution that could be exacted in this world was sufficient; it was therefore announced that the Brahmin must go to hell for having suffered contamination from a woman immeasurably his inferior.[10] Indeed, it was ordered that the mere

[1] "Either be banished with a mark on his hinder parts, or the king shall cause a gash to be made on his buttock" (Institutes of Manu, chap. viii, sec. 281, in Works of Sir W. Jones, Vol. VIII, p. 315). See also Ward's View of the Hindoos, Vol. III, p. 67.

[2] Manu, chap. viii, sec. 271, in Jones' Works, Vol. III, p. 314.

[3] Manu, chap. viii, sec. 270.

[4] "If a Sooder gives much and frequent molestation to a Brahmin, the magistrate shall put him to death" (Halhed's Code of Gentoo Laws, p. 262).

[5] Halhed's Code of Gentoo Laws, p. 207. As to the case of striking a Brahmin, see Rammohun Roy on the Veds, 2d ed. 1832, p. 227.

[6] "And if a Sooder listens to the Beids of the Shaster, then the oil, heated as before, shall be poured into his ears; and arzeez and wax shall be melted together, and the orifice of his ears shall be stopped up therewith" (Halhed, p. 262). Compare the prohibition in Manu, chap. iv, sec. 99, chap. x, secs. 109–111, in Jones' Works, Vol. III, pp. 174, 398.

[7] "The magistrate shall put him to death" (Halhed, p. 262). In Mrichchakati, the judge says to a Sudra, "If you expound the Vedas, will not your tongue be cut out?" (Wilson's Theatre of the Hindus, Vol. I, Part II, p. 170).

[8] Ward's View of the Hindoos, Vol. IV, p. 308. To this the only exception was in the case of theft (Mill's History of India, Vol. I, pp. 193, 260). A Brahmin could "on no account be capitally punished" (Asiatic Researches, Vol. XV, p. 44).

[9] Manu, chap. xi, sec. 132, in Works of Sir W. Jones, Vol. III, p. 422.

[10] "A Brahmin, if he take a Sudra to his bed as his first wife, sinks to the regions of torment" (Institutes of Manu, chap. iii, sec. 17, in Jones' Works, Vol. III, p. 121). Compare the denial of funeral rites, in Colebrooke's Digest of Hindu Law, Vol. III, p. 328. And on the different hells invented by the Hindu clergy, see Vishnu Purana, p. 207; Ward's View of the Hindoos, Vol. II, pp. 182, 183; Coleman's Mythology of the Hindus, p. 113. The curious details in Rhode, Die

name of a laborer should be expressive of contempt, so that his proper standing might be immediately known.[1] And lest this should not be enough to maintain the subordination of society, a law was actually made forbidding any laborer to accumulate wealth;[2] while another clause declared that even though his master should give him freedom, he would in reality still be a slave; "for," says the lawgiver, "of a state which is natural to him, by whom can he be divested?"[3]

By whom, indeed, could he be divested? I ween not where that power was by which so vast a miracle could be worked. For in India, slavery — abject, eternal slavery — was the natural state of the great body of the people; it was the state to which they were doomed by physical laws utterly impossible to resist. The energy of those laws is, in truth, so invincible that wherever they have come into play they have kept the productive classes in perpetual subjection. There is no instance on record of any tropical country in which, wealth having been extensively accumulated, the people have escaped their fate; no instance in which the heat of the climate has not caused an abundance of food, and the abundance of food caused an unequal distribution, first of wealth, and then of political and social power. Among nations subjected to these conditions the people have counted for nothing; they have had no voice in the management of the state, no control over the wealth their own industry created. Their only business has been to labor; their only duty, to obey. Thus

Religiöse Bildung der Hindus, Vol. I, pp. 392, 393, rather refer to Buddhism, and should be compared with *Journal Asiatique*, Vol. VIII, pp. 80, 81, 1826, I série, Paris.

[1] Manu, chap. ii, sec. 31, in Jones' Works, Vol. III, p. 87; also noticed in Rhode, Die Religiöse Bildung, Vol. II, p. 561: "Sein Name soll schon Verachtung ausdrücken." So, too, Mr. Elphinstone (History of India, p. 117): "The proper name of a Sudra is directed to be expressive of contempt." Compare Origines du Droit, in Œuvres de Michelet, Bruxelles, 1840, Vol. II, p. 387.

[2] Manu, chap. x, sec. 129, in Jones' Works, Vol. III, p. 401. This law is pointed out by Mill (History of India, Vol. I, p. 195) as an evidence of the miserable state of the people, which Mr. Wilson (note in page 194) vainly attempts to evade.

[3] "A Sudra, though emancipated by his master, is not released from a state of servitude; for of a state which is natural to him, by whom can he be divested?" (Institutes of Manu, chap. viii, sec. 414, in Works of Sir W. Jones, Vol. III, p. 333).

there have been generated among them those habits of tame and servile submission by which, as we know from history, they have always been characterized. For it is an undoubted fact that their annals furnish no instance of their having turned upon their rulers, no war of classes, no popular insurrections, not even one great popular conspiracy. In those rich and fertile countries there have been many changes, but all of them have been from above, not from below. The democratic element has been altogether wanting. There have been, in abundance, wars of kings and wars of dynasties. There have been revolutions in the government, revolutions in the palace, revolutions on the throne; but no revolutions among the people,[1] no mitigation of that hard lot which nature rather than man assigned to them. Nor was it until civilization arose in Europe that other physical laws came into operation, and therefore other results were produced. In Europe, for the first time, there was some approach to equality, some tendency to correct that enormous disproportion of wealth and power which formed the essential weakness of the greatest of the more ancient countries. As a natural consequence, it is in Europe that everything worthy of the name of civilization has originated; because there alone have attempts been made to preserve the balance of its relative parts. There alone has society been organized according to a scheme, not indeed sufficiently large, but still wide enough to include all the different classes of which it is composed, and thus, by leaving room for the progress of each, to secure the permanence and advancement of the whole.

The way in which certain other physical peculiarities confined to Europe have also accelerated the progress of man by diminishing his superstition will be indicated towards the end of this chapter; but as that will involve an examination of some laws which I have not yet noticed, it seems advisable, in the first

[1] An intelligent observer says: "It is also remarkable how little the people of Asiatic countries have to do in the revolutions of their governments. They are never guided by any great and common impulse of feeling, and take no part in events the most interesting and important to their country and their own prosperity" (M'Murdo on the Country of Sindh, in *Journal of Asiatic Society*, Vol. I, p. 250). Compare similar remarks in Herder's Ideen zur Geschichte, Vol. III, p. 114; and even in Alison's History of Europe, Vol. X, pp. 419, 420.

place, to complete the inquiry now before us; and I therefore purpose proving that the line of argument which has been just applied to India is likewise applicable to Egypt, to Mexico, and to Peru. For by thus including in a single survey the most conspicuous civilizations of Asia, Africa, and America, we shall be able to see how the preceding principles hold good of different and distant countries; and we shall be possessed of evidence sufficiently comprehensive to test the accuracy of those great laws which, without such precaution, I might be supposed to have generalized from scanty and imperfect materials.

The reasons why, of all the African nations, the Egyptians alone were civilized, have been already stated, and have been shown to depend on those physical peculiarities which distinguish them from the surrounding countries, and which, facilitating the acquisition of wealth, not only supplied them with material resources that otherwise they could never have obtained, but also secured to their intellectual classes the leisure and the opportunity of extending the boundaries of knowledge. It is, indeed, true that, notwithstanding these advantages, they effected nothing of much moment; but this was owing to circumstances which will be hereafter explained; and it must, at all events, be admitted that they raised themselves far above every other people by whom Africa was inhabited.

The civilization of Egypt being, like that of India, caused by the fertility of the soil, and the climate being also very hot,[1] there were in both countries brought into play the same laws; and there naturally followed the same results. In both countries we find the national food cheap and abundant; hence the labor market oversupplied; hence a very unequal division of wealth and power; and hence all the consequences which such inequality will inevitably produce. How this system worked in India I have just attempted to examine; and although the materials for studying the former condition of Egypt are much less ample, they are still sufficiently numerous to prove the striking analogy between the two civilizations and the identity of those great

[1] Volney (Voyage en Égypte, Vol. I, pp. 58–63) has a good chapter on the climate of Egypt.

principles which regulated the order of their social and political development.

If we inquire into the most important circumstances which concerned the people of ancient Egypt, we shall see that they are exactly a counterpart of those that have been noticed in India. For, in the first place, as regards their ordinary food, what rice is to the most fertile parts of Asia dates are to Africa. The palm tree is found in every country from the Tigris to the Atlantic;[1] and it supplies millions of human beings with their daily food in Arabia,[2] and in nearly the whole of Africa north of the equator.[3] In many parts of the great African desert it is indeed unable to bear fruit; but naturally it is a very hardy plant, and produces dates in such profusion that towards the north of the Sahara they are eaten not only by man but also by domestic animals.[4] And in Egypt, where the palm is said to be

[1] It is, however, unknown in South Africa. See the account of the Palmaceæ in Lindley's Vegetable Kingdom, 1847, p. 136, and Meyen's Geography of Plants, p. 337.

[2] "Of all eatables used by the Arabs, dates are the most favorite" (Burckhardt's Travels in Arabia, Vol. I, p. 56. See also for proof of their abundance in the west of Arabia, Vol. I, pp. 103, 157, 238; Vol. II, pp. 91, 100, 105, 118, 209, 210, 214, 253, 300, 331. And on the dates of Oman and the east of Arabia, see Wellsted's Travels in Arabia, Vol. I, pp. 188, 189, 236, 276, 290, 349. Compare Niebuhr, Description de l'Arabie, pp. 142, 296. Indeed, they are so important that the Arabs have different names for them, according to the stages of their growth. Djewhari says, "La dénomination *balah* précède le nom *bosr;* car la datte se nomme d'abord *tala*, en suite *khalal*, puis *balah*, puis *bosr*, puis *rotab*, et enfin *tamr*" (De Sacy's note to Abd-Allatif's Relation de l'Égypte, p. 74). See also p. 118. Other notices of the dates of Arabia will be found in Travels of Ibn Batuta in Fourteenth Century, p. 66; *Journal of Asiatic Society*, Vol. VIII, p. 286; *Journal of Geographical Society*, Vol. IV, p. 201; Vol. VI, pp. 53, 55, 58, 66, 68, 74; Vol. VII, p. 32; Vol. IX, pp. 147, 151.

[3] Heeren (Trade of the African Nations, Vol. I, p. 182) supposes that in Africa dates are comparatively little known south of 26° north latitude. But this learned writer is certainly mistaken; and a reference to the following passages will show that they are common as far down as the parallel of Lake Tchad, which is nearly the southern limit of our knowledge of central Africa: Denham's Central Africa, p. 295; Clapperton's Journal, in Appendix to Denham, pp. 34, 59; Clapperton's Second Expedition, p. 159. Further east they are somewhat scarcer, but are found much more to the south than is supposed by Heeren. See Pallme's Kordofan, p. 220.

[4] "Dates are not only the principal growth of the Fezzan oases, but the main subsistence of their inhabitants. All live on dates; men, women, and children,

of spontaneous growth,[1] dates, besides being the chief sustenance of the people, are so plentiful that from a very early period they have been commonly given to camels, the only beasts of burden generally used in that country.

From these facts it is evident that, taking Egypt as the highest type of African civilization, and India as the highest type of Asiatic civilization, it may be said that dates are to the first civilization what rice is to the second. Now it is observable that all the most important physical peculiarities found in rice are also found in dates. In regard to their chemistry, it is well known that the chief principle of the nutriment they contain is the same in both, the starch of the Indian vegetable being merely turned into the sugar of the Egyptian. In regard to the laws of climate, their affinity is equally obvious, since dates, like rice, belong to hot countries, and flourish most in or near the tropics. In regard to their increase, and the laws of their connection with the soil, the analogy is also exact; for dates, just the same as rice, require little labor, and yield abundant returns, while they occupy so small a space of land in comparison with the nutriment they afford that upwards of two hundred palm trees are sometimes planted on a single acre.[2]

horses, asses, and camels, and sheep, fowls, and dogs" (Richardson's Travels in the Sahara, Vol. II, p. 323, and see Vol. I, p. 343). As to those parts of the desert where the palm will not bear, see Vol. I, pp. 387, 405; Vol. II, pp. 291, 363. Respecting the dates of Western Africa, see *Journal of Geographical Society*, Vol. XII, p. 204.

[1] "It flourished spontaneously in the valley of the Nile" (Wilkinson's Ancient Egyptians, Vol. II, p. 372). As further illustration of the importance to Africa of this beautiful plant, it may be mentioned that from the high palm there is prepared a peculiar beverage, which in some parts is in great request. On this, which is called palm wine, see M'William's Medical Expedition to the Niger, pp. 71, 116; Meredith's Gold Coast of Africa, 1812, pp. 55, 56; Laird and Oldfield's Expedition into the Interior of Africa, 1837, Vol. II, pp. 170, 213; Bowdich's Mission to Ashantee, pp. 69, 100, 152, 293, 386, 392. But I doubt if this is the same as the palm wine mentioned in Balfour's Botany, 1849, p. 532. Compare Tuckey's Expedition to the Zaire, pp. 155, 216, 224, 356.

[2] "In the valley of the Nile a feddan (1¼ acres) is sometimes planted with four hundred trees" (Wilkinson's Ancient Egyptians, Vol. II, p. 178). At Murzuk an entire date palm is only worth about a shilling (Richardson's Central Africa, Vol. I, p. 111).

Thus striking are the similarities to which, in different countries, the same physical conditions naturally give rise. At the same time, in Egypt, as in India, the attainment of civilization was preceded by the possession of a highly fertile soil; so that, while the exuberance of the land regulated the speed with which wealth was created, the abundance of the food regulated the proportions into which the wealth was divided. The most fertile part of Egypt is the Said;[1] and it is precisely there that we find the greatest display of skill and knowledge, the splendid remains of Thebes, Karnak, Luxor, Dendera, and Edfu.[2] It is also in the Said, or, as it is often called, the Thebaid, that a food is used which multiplies itself even more rapidly than either dates or rice. This is the dhourra, which until recently was confined to Upper Egypt,[3] and of which the reproductive power is so remarkable that it yields to the laborer a return of two hundred and forty for one.[4] In Lower Egypt the dhourra was formerly

[1] On the remarkable fertility of the Said, see Abd-Allatif, Relation de l'Égypte, p. 3.

[2] The superiority of the ruins in southern Egypt over those in the northern part is noticed by Heeren (African Nations, Vol. II, p. 69), and must, indeed, be obvious to whoever has studied the monuments. In the Said the Coptic was preserved longer than in Lower Egypt, and is known to philologists by the name of Misr. See Quatremère, Recherches sur la Langue de l'Égypte, pp. 20, 41, 42. See also on the Saidic, pp. 134–140, and some good remarks by Dr. Prichard (Physical History, Vol. II, p. 202), who, however, adopts the paradoxical opinion of Georgi respecting the origin of the language of the Thebaid.

[3] Abd-Allatif (Relation de l'Égypte, p. 32) says, that in his time it was only cultivated in the Said. This curious work by Abd-Allatif was written in A.D. 1203 (Relation, p. 423). Meiners thinks that Herodotus and other ancient writers refer to the dhourra without mentioning it: "Diese Durra muss daher im Herodot, wie in andern alten Schriftstellern, vorzüglich verstanden werden, wenn von hundert, zwei hundert, und mehrfältigen Früchten, welche die Erde trage, die Rede ist" (Meiners, Fruchtbarkeit der Länder, Vol. I, p. 139). According to Volney, it is the *Holcus Arundinaceus* of Linnæus, and appears to be similar to millet; and though that accurate traveler distinguishes between them, I observe that Captain Haines, in a recent memoir, speaks of them as being the same. Compare Haines in *Journal of Geographical Society*, Vol. XV, p. 118, with Volney, Voyage en Égypte, Vol. I, p. 195.

[4] "The return is in general not less than two hundred and forty for one; and the average price is about 3*s.* 9*d.* the ardeb, which is scarcely 3*d.* per bushel" (Hamilton's Ægyptiaca, p. 420). In Upper Egypt "the doura constitutes almost the whole subsistence of the peasantry" (p. 419). At p. 96, Hamilton says, "I have frequently counted three thousand grains in one ear of doura, and each

unknown; but, in addition to dates, the people made a sort of bread from the lotus, which sprang spontaneously out of the rich soil of the Nile.[1] This must have been a very cheap and accessible food; while to it there was joined a profusion of other plants and herbs, on which the Egyptians chiefly lived.[2] Indeed, so inexhaustible was the supply, that at the time of the Mohammedan invasion there were, in the single city of Alexandria, no less than four thousand persons occupied in selling vegetables to the people.[3]

From this abundance of the national food there resulted a train of events strictly analogous to those which took place in India. In Africa, generally, the growth of population, though on the one hand stimulated by the heat of the climate, was on the other hand checked by the poverty of the soil. But on the banks of the Nile this restraint no longer existed,[4] and therefore the laws already noticed came into uncontrolled operation. By virtue

stalk has in general four or five ears." For an account of the dhourra bread, see Volney, Voyage en Égypte, Vol. I, p. 161.

[1] Ἐπεὰν πλήρης γένηται ὁ ποταμὸς, καὶ τὰ πεδία πελαγίσῃ, φύεται ἐν τῷ ὕδατι κρίνεα πολλὰ, τὰ Αἰγύπτιοι καλέουσι λωτόν· ταῦτα ἐπεὰν δρέψωσι, αὐαίνουσι πρὸς ἥλιον. καὶ ἔπειτα τὸ ἐκ τοῦ μέσου τοῦ λωτοῦ τῇ μήκωνι ἐὸν ἐμφερὲς, πτίσαντες, ποιεῦνται ἐξ αὐτοῦ ἄρτους ὀπτοὺς πυρί (Herodotus, II, 92).

[2] Wilkinson's Ancient Egyptians, Vol. II, pp. 370–372, 400; Vol. IV, p. 59. Abd-Allatif gives a curious account of the different vegetables grown in Egypt early in the thirteenth century (Relation, pp. 16–36, and the notes of De Sacy, pp. 37–134). On the κύαμος of Herodotus there are some botanical remarks worth reading in the Correspondence of Sir J. E. Smith, Vol. II, pp. 224–232; but I doubt the assertion (p. 227) that Herodotus "knew nothing of any other kind of κύαμος in Egypt than that of the ordinary bean."

[3] "When Alexandria was taken by Amer, the lieutenant of the Caliph Omar, no less than four thousand persons were engaged in selling vegetables in that city" (Wilkinson's Ancient Egyptians, Vol. II, p. 372, and see Vol. I, p. 277; Vol. IV, p. 60). Niebuhr (Description de l'Arabie, p. 136) says that the neighborhood of Alexandria is so fertile that "le froment y rend le centuple." See also, on its rich vegetation, Matter, Histoire de l'École d'Alexandrie, Vol. I, p. 52.

[4] The encouragement given to the increase of population by the fertility arising from the inundation of the Nile is observed by many writers, but by none so judiciously as Malthus (Essay on Population, Vol. I, pp. 161–163). This great work, the principles of which have been grossly misrepresented, is still the best which has been written on the important subject of population; though the author, from a want of sufficient reading, often errs in his illustrations, while he unfortunately had no acquaintance with those branches of physical knowledge which are intimately connected with economical inquiries.

of those laws, the Egyptians were not only satisfied with a cheap food, but they required that food in comparatively small quantities, thus by a double process increasing the limit to which their numbers could extend. At the same time the lower orders were able to rear their offspring with the greater ease, because, owing to the high rate of temperature, another considerable source of expense was avoided; the heat being such that, even for adults, the necessary clothes were few and slight, while the children of the working classes went entirely naked, affording a striking contrast to those colder countries, where, to preserve ordinary health, a supply of warmer and more costly covering is essential. Diodorus Siculus, who traveled in Egypt nineteen centuries ago, says that to bring up a child to manhood did not cost more than twenty drachmas, scarcely thirteen shillings English money, — a circumstance which he justly notices as a cause of the populousness of the country.[1]

To compress into a single sentence the preceding remarks, it may be said that in Egypt the people multiplied rapidly, because while the soil increased their supplies, the climate lessened their wants. The result was that Egypt was not only far more thickly peopled than any other country in Africa but probably more so than any in the ancient world. Our information upon this point is indeed somewhat scanty, but it is derived from sources of unquestioned credibility. Herodotus, who the more he is understood the more accurate he is found to be,[2] states that

[1] *Τρέφουσι δὲ τὰ παιδία μετά τινος εὐχερείας ἀδαπάνου, καὶ παντελῶς ἀπίστου. . . . ἀνυποδέτων δὲ τῶν πλείστων καὶ γυμνῶν τρεφομένων διὰ τὴν εὐκρασίαν τῶν τόπων, τὴν πᾶσαν δαπάνην οἱ γονεῖς, ἄχρις ἂν εἰς ἡλικίαν ἔλθῃ τὸ τέκνον, οὐ πλείω ποιοῦσι δραχμῶν εἴκοσι. δι' ἃς αἰτίας μάλιστα τὴν Αἴγυπτον συμβαίνει πολυανθρωπίᾳ διαφέρειν, καὶ διὰ τοῦτο πλείστας ἔχειν μεγάλων ἔργων κατασκευάς* (Bibliothec. Hist., Book I, chap. lxxx, Vol. I, p. 238).

[2] Frederick Schlegel (Philosophy of History, p. 247, London, 1846) truly says, "The deeper and more comprehensive the researches of the moderns have been on ancient history, the more have their regard and esteem for Herodotus increased." His minute information respecting Egypt and Asia Minor is now admitted by all competent geographers, and I may add that a recent and very able traveler has given some curious proofs of his knowledge even of the western parts of Siberia. See Erman's valuable work, Travels in Siberia, Vol. I, pp. 211, 297–301.

in the reign of Amasis there were said to have been twenty thousand inhabited cities.[1] This may, perhaps, be considered an exaggeration; but what is very observable is that Diodorus Siculus, who traveled in Egypt four centuries after Herodotus, and whose jealousy of the reputation of his great predecessor made him anxious to discredit his statement,[2] does, nevertheless, on this important point, confirm them. For he not only remarks that Egypt was at that time as densely inhabited as any existing country, but he adds, on the authority of records which were then extant, that it was formerly the most populous in the world, having contained, he says, upwards of eighteen thousand cities.[3]

These were the only two ancient writers who, from personal knowledge, were well acquainted with the state of Egypt;[4] and their testimony is the more valuable because it was evidently drawn from different sources; the information of Herodotus being chiefly collected at Memphis, that of Diodorus at Thebes.[5]

[1] Ἐπ' Ἀμάσιος δὲ βασιλέος λέγεται Αἴγυπτος μάλιστα δὴ τότε εὐδαιμονῆσαι, καὶ τὰ ἀπὸ τοῦ ποταμοῦ τῇ χώρῃ γινόμενα, καὶ τὰ ἀπὸ τῆς χώρης τοῖσι ἀνθρώποισι. καὶ πόλις ἐν αὐτῇ γενέσθαι τὰς ἁπάσας τότε δισμυρίας τὰς οἰκεομένας (Herodotus, Book II, chap. clxxvii).

[2] Diodorus, who, though an honest and painstaking man, was in every respect inferior to Herodotus, says, impertinently enough, ὅσα μὲν οὖν Ἡρόδοτος καί τινες τῶν τὰς Αἰγυπτίων πράξεις συνταξαμένων ἐσχεδιάκασιν, ἑκουσίως προκρίναντες τῆς ἀληθείας τὸ παραδοξολογεῖν, καὶ μύθους πλάττειν ψυχαγωγίας ἕνεκα, παρήσομεν (Bibliothec. Hist., Book I, chap. lxix, Vol. I, p. 207). In other places he alludes to Herodotus in the same tone, without actually mentioning him.

[3] Πολυανθρωπίᾳ δὲ τὸ μὲν παλαιὸν πολὺ προέσχε πάντων τῶν γνωριζομένων τόπων κατὰ τὴν οἰκουμένην, καὶ καθ' ἡμᾶς δὲ οὐδενὸς τῶν ἄλλων δοκεῖ λείπεσθαι. ἐπὶ μὲν γὰρ τῶν ἀρχαίων χρόνων ἔσχε κώμας ἀξιολόγους, καὶ πόλεις πλείους τῶν μυρίων καὶ ὀκτακισχιλίων, ὡς ἐν ταῖς ἀναγραφαῖς ὁρᾶν ἐστι κατακεχωρισμένον (Diod. Sic., Bibliothec. Hist., Book I, chap. xxxi, Vol. I, p. 89).

[4] Notwithstanding the positive assertions of M. Matter (Histoire de l'École d'Alexandrie, Vol. II, p. 285; compare Histoire du Gnosticisme, Vol. I, p. 48), there is no good evidence for the supposed travels in Egypt of the earlier Greeks, and it is even questionable if Plato ever visited that country. "Whether he was ever in Egypt is doubtful" (Bunsen's Egypt, Vol. I, p. 60). The Romans took little interest in the subject (Bunsen, Vol. I, pp. 152–158); and, says M. Bunsen (p. 152), "with Diodorus all systematic inquiry into the history of Egypt ceases, not only on the part of the Greeks, but of the ancients in general." Mr. Leake, in an essay on the Quorra, arrives at the conclusion that after the time of Ptolemy the ancients made no additions to their knowledge of African geography (*Journal of Geographical Society*, Vol. II, p. 9).

[5] See on this some good remarks in Heeren's African Nations, Vol. II, pp. 202–207; and as to the difference between the traditions of Thebes and

And whatever discrepancies there may be between these two accounts, they are both agreed respecting the rapid increase of the people and the servile condition into which they had fallen. Indeed, the mere appearance of those huge and costly buildings, which are still standing, is a proof of the state of the nation that erected them. To raise structures so stupendous,[1] and yet so useless,[2] there must have been tyranny on the part of the rulers and slavery on the part of the people. No wealth, however great, no expenditure, however lavish, could meet the expense which would have been incurred if they had been the work of free men, who received for their labor a fair and honest reward.[3] But in Egypt, as in India, such considerations were disregarded, because everything tended to favor the upper ranks of society and depress the lower. Between the two there was an immense and impassable gap.[4] If a member of the industrious classes changed his usual employment or was known to pay attention to political matters, he was severely punished;[5] and under no circumstances

Memphis, see Matter, Histoire de l'École d'Alexandrie, Vol. I, p. 7. The power and importance of the two cities fluctuated, both being at different periods the capital. Bunsen's Egypt, Vol. II, pp. 54, 55, 244, 445, 446; Vyse on the Pyramids, Vol. III, pp. 27, 100; Sharpe's History of Egypt, Vol. I, pp. 9, 19, 24, 34, 167, 185.

[1] Sir John Herschel (Discourse on Natural Philosophy, p. 60) calculates that the great pyramid weighs 12,760,000,000 pounds. Compare Lyell's Principles of Geology, p. 459, where the still larger estimate of 6,000,000 tons is given. But according to Perring, the present quantity of masonry is 6,316,000 tons, or 82,110,000 cubic feet. See Bunsen's Egypt, Vol. II, p. 155, London, 1854, and Vyse on the Pyramids, 1840, Vol. II, p. 113.

[2] Many fanciful hypotheses have been put forward as to the purpose for which the pyramids were built; but it is now admitted that they were neither more nor less than tombs for the Egyptian kings! See Bunsen's Egypt, Vol. II, pp. xvii, 88, 105, 372, 389; and Sharpe's History of Egypt, Vol. I, p. 21.

[3] For an estimate of the expense at which one of the pyramids could be built in our time by European workmen, see Vyse on the Pyramids, Vol. II, p. 268. On account, however, of the number of disturbing causes, such calculations have little value.

[4] Those who complain that in Europe this interval is still too great may derive a species of satisfaction from studying the old extra-European civilizations.

[5] Wilkinson's Ancient Egyptians, Vol. II, pp. 8, 9. "Nor was any one permitted to meddle with political affairs, or to hold any civil office in the state." . . . "If any artisan meddled with political affairs, or engaged in any other employment than the one to which he had been brought up, a severe punishment was instantly inflicted upon him." Compare Diod. Sic., Bibliothec. Hist., Book I, chap. lxxiv, Vol. I, p. 223.

was the possession of land allowed to an agricultural laborer, to a mechanic, or indeed to any one except the king, the clergy, and the army.[1] The people at large were little better than beasts of burden; and all that was expected from them was an unremitting and unrequited labor. If they neglected their work, they were flogged; and the same punishment was frequently inflicted upon domestic servants, and even upon women.[2] These and similar regulations were well conceived; they were admirably suited to that vast social system which, because it was based on despotism, could only be upheld by cruelty. Hence it was that the industry of the whole nation being at the absolute command of a small part of it, there arose the possibility of rearing those vast edifices which inconsiderate observers admire as a proof of civilization,[3] but which, in reality, are evidence of a state of things altogether depraved and unhealthy; a state in which the skill and the arts of an imperfect refinement injured those whom they ought to have benefited; so that the very resources which the people had created were turned against the people themselves.

That in such a society as this much regard should be paid to human suffering it would indeed be idle to expect.[4] Still, we are

[1] Wilkinson's Ancient Egyptians, Vol. I, p. 263; Vol. II, p. 2; Sharpe's History of Egypt, Vol. II, p. 24.

[2] Wilkinson's Ancient Egyptians, Vol. II, pp. 41, 42; Vol. III, p. 69; Vol. IV, p. 131. Compare Ammianus Marcellinus, in Hamilton's Ægyptiaca, p. 309.

[3] Vyse on the Pyramids, Vol. I, p. 61; Vol. II, p. 92.

[4] "Ein König ahmte den andern nach, oder suchte ihn zu übertreffen; indess das gutmüthige Volk seine Lebenstage am Baue dieser Monumente verzehren musste. So entstanden wahrscheinlich die Pyramiden und Obelisken Aegyptens. Nur in den ältesten Zeiten wurden sie gebauet: denn die spätere Zeit und jede Nation, die ein nützliches Gewerbe treiben lernte, bauete keine Pyramiden mehr. Weit gefehlt also, dass Pyramiden ein Kennzeichen von der Glückseligkeit und Aufklärung des alten Aegyptens seyn sollten, sind sie ein unwidersprechliches Denkmal von dem Aberglauben und der Gedankenlosigkeit sowohl der Armen, die da baueten, als der Ehrgeizigen, die den Bau befahlen" (Herder, Ideen zur Geschichte, Vol. III, pp. 103, 104. See also p. 293, and some admirable remarks in Volney, Voyage en Égypte, Vol. I, pp. 240, 241). Even M. Bunsen, notwithstanding his admiration, says of one of the pyramids: "The misery of the people, already grievously oppressed, was aggravated by the construction of this gigantic building. . . . The bones of the oppressors of the people who for two whole generations harassed hundreds of thousands from day to day," etc. (Bunsen's Egypt, Vol. II, p. 176, a learned and enthusiastic work).

startled by the reckless prodigality with which, in Egypt, the upper classes squandered away the labor and the lives of the people. In this respect, as the monuments yet remaining abundantly prove, they stand alone and without a rival. We may form some idea of the almost incredible waste when we hear that two thousand men were occupied for three years in carrying a single stone from Elephantine to Sais;[1] that the Canal of the Red Sea alone cost the lives of a hundred and twenty thousand Egyptians;[2] and that to build one of the pyramids required the labor of three hundred and sixty thousand men for twenty years.[3]

If, passing from the history of Asia and Africa, we now turn to the New World, we shall meet with fresh proof of the accuracy of the preceding views. The only parts of America which before the arrival of the Europeans were in some degree civilized were Mexico and Peru;[4] to which may probably be added that long and narrow tract which stretches from the south of Mexico to the Isthmus of Panama. In this latter country, which is now known as Central America, the inhabitants, aided by the fertility of the soil,[5] seem to have worked out for themselves a certain amount of knowledge; since the ruins still extant prove the possession of a mechanical and architectural skill too considerable

[1] Καὶ τοῦτο ἐκόμιζον μὲν ἐπ' ἔτεα τρία, διςχίλιοι δέ οἱ προσετετάχατο ἄνδρες ἀγωγέες (Herodotus, Book II, chap. clxxv). On the enormous weight of the stones which the Egyptians sometimes carried, see Bunsen's Egypt, Vol. I, p. 379; and as to the machines employed, and the use of inclined roads for the transit, see Vyse on the Pyramids, Vol. I, p. 197; Vol. III, pp. 14, 38.

[2] Wilkinson's Ancient Egyptians, Vol. I, p. 70; but this learned writer is unwilling to believe a statement so adverse to his favorite Egyptians. It is likely enough that there is some exaggeration; still no one can dispute the fact of an enormous and unprincipled waste of human life.

[3] Τριάκοντα μὲν γὰρ καὶ ἓξ μυριάδες ἀνδρῶν, ὥς φασι, ταῖς τῶν ἔργων λειτουργίαις προσήδρευσαν, τὸ δὲ πᾶν κατασκεύασμα τέλος ἔσχε μόγις ἐτῶν εἴκοσι διελθόντων (Diod. Sic., Bibliothec. Hist., Book I, chap. lxiii, Vol. I, p. 188).

[4] "When compared with other parts of the New World, Mexico and Peru may be considered as polished states" (History of America, Book VII, in Robertson's Works, p. 904). See, to the same effect, *Journal of Geographical Society*, Vol. V, p. 355.

[5] Compare Squier's Central America, Vol. I, pp. 34, 244, 358, 421; Vol. II, p. 307, with *Journal of Geographical Society*, Vol. III, p. 59; Vol. VIII, pp. 319, 323.

to be acquired by any nation entirely barbarous.[1] Beyond this nothing is known of their history; but the accounts we have of such buildings as Copan, Palenque, and Uxmal make it highly probable that Central America was the ancient seat of a civilization in all essential points similar to those of India and Egypt; that is to say, similar to them in respect to the unequal distribution of wealth and power, and the thraldom in which the great body of the people consequently remained.[2]

But although the evidence from which we might estimate the former condition of Central America is almost entirely lost,[3] we are more fortunate in regard to the histories of Mexico and Peru.

[1] Mr. Squier (Central America, Vol. II, p. 68), who explored Nicaragua, says of the statues, "The material, in every case, is a black basalt, of great hardness, which, with the best of modern tools, can only be cut with difficulty." Mr. Stephens (Central America, Vol. II, p. 355) found at Palenque "elegant specimens of art and models for study." See also Vol. III, pp. 276, 389, 406; Vol. IV, p. 293. Of the paintings at Chichen he says (Vol. IV, p. 311), "They exhibit a freedom of touch which could only be the result of discipline and training under masters." At Copan (Vol. I, p. 151), "it would be impossible, with the best instruments of modern times, to cut stones more perfectly." And at Uxmal (Vol. II, p. 431), "Throughout, the laying and polishing of the stones are as perfect as under the rules of the best modern masonry." Our knowledge of Central America is almost entirely derived from these two writers; and although the work of Mr. Stephens is much the more minute, Mr. Squier says (Vol. II, p. 306) what I believe is quite true, that until the appearance of his own book in 1853, the monuments in Nicaragua were entirely unknown. Short descriptions of the remains in Guatemala and Yucatan will be found in Larenaudière, Mexique et Guatemala, pp. 308–327, and in *Journal of Geographical Society*, Vol. III, pp. 60–63.

[2] See the remarks on Yucatan in Prichard's Physical History of Mankind, Vol. V, p. 348: "A great and industrious, though perhaps, as the writer above cited (Gallatin) observes, an enslaved population. Splendid temples and palaces attest the power of the priests and nobles, while as usual no trace remains of the huts in which dwelt the mass of the nation."

[3] Dr. M'Culloh (Researches concerning the Aboriginal History of America, pp. 272–340) has collected from the Spanish writers some meager statements respecting the early condition of Central America; but of its social state and history properly so called nothing is known, nor is it even certain to what family of nations the inhabitants belonged, though a recent author can find "la civilisation guatemalienne ou mistecozapotèque et mayaquiche vivante pour nous encore dans les ruines de Mitla et de Palenque" (Mexique et Guatemala, par Larenaudière, p. 8, Paris, 1843). Dr. Prichard, too, refers the ruins in Central America to "the Mayan race." See Prichard on Ethnology, in *Report of British Association for 1847*, p. 252. But the evidence for these and similar statements is very unsatisfactory.

There are still existing considerable and authentic materials, from which we may form an opinion on the ancient state of those two countries, and on the nature and extent of their civilization. Before, however, entering upon this subject, it will be convenient to point out what those physical laws were which determined the localities of American civilization, or, in other words, why it was that in these countries alone society should have been organized into a fixed and settled system, while the rest of the New World was peopled by wild and ignorant barbarians. Such an inquiry will be found highly interesting, as affording further proof of the extraordinary, and indeed irresistible, force with which the powers of nature have controlled the fortunes of man.

The first circumstance by which we must be struck is that in America, as in Asia and Africa, all the original civilizations were seated in hot countries; the whole of Peru proper being within the southern tropic, the whole of Central America and Mexico within the northern tropic. How the heat of the climate operated on the social and political arrangements of India and Egypt I have attempted to examine, and it has, I trust, been proved that the result was brought about by diminishing the wants and requirements of the people, and thus producing a very unequal distribution of wealth and power. But, besides this, there is another way in which the average temperature of a country affects its civilization, and the discussion of which I have reserved for the present moment, because it may be more clearly illustrated in America than elsewhere. Indeed, in the New World the scale on which nature works, being much larger than in the Old, and her forces being more overpowering, it is evident that her operations on mankind may be studied with greater advantage than in countries where she is weaker, and where, therefore, the consequences of her movements are less conspicuous.

If the reader will bear in mind the immense influence which an abundant national food has been shown to exercise, he will easily understand how, owing to the pressure of physical phenomena, the civilization of America was, of necessity, confined to those parts where alone it was found by the discoverers of the New World. For, setting aside the chemical and geognostic varieties

of soil, it may be said that the two causes which regulate the fertility of every country are heat and moisture.[1] Where these are abundant, the land will be exuberant; where they are deficient, it will be sterile. This rule is, of course, in its application subject to exceptions, arising from physical conditions which are independent of it; but if other things are equal, the rule is invariable. And the vast additions which, since the construction of isothermal lines, have been made to our knowledge of geographical botany, enable us to lay this down as a law of nature, proved not only by arguments drawn from vegetable physiology but also by a careful study of the proportions in which plants are actually distributed in different countries.[2]

A general survey of the continent of America will illustrate the connection between this law and the subject now before us. In the first place, as regards moisture, all the great rivers in the New World are on the eastern coast, none of them on the western. The causes of this remarkable fact are unknown;[3] but it

[1] Respecting the connection between the vegetable productions of a country and its geognostic peculiarities, little is yet known; but the reader may compare Meyen's Geography of Plants, p. 64, with *Reports on Botany by the Ray Society*, 1846, pp. 70, 71. The chemical laws of soil are much better understood, and have a direct practical bearing on the use of manures. See Turner's Chemistry, Vol. II, pp. 1310–1314; Brande's Chemistry, Vol. I, p. 691; Vol. II, pp. 1867–1869; Balfour's Botany, pp. 116–122; Liebig and Kopp's Reports, Vol. II, pp. 315, 328; Vol. III, p. 463; Vol. IV, pp. 438, 442, 446.

[2] As to the influence of heat and moisture on the geographical distribution of plants, see Henslow's Botany, pp. 295–300, and Balfour's Botany, pp. 560–563. Meyen (Geography of Plants, p. 263) says, "I therefore, after allowing for local circumstances, bring the vegetation of islands also under that law of nature, according to which the number of species constantly increases with increasing heat and corresponding humidity." On the effect of temperature alone, compare a note in Erman's Siberia, Vol. I, pp. 64, 65, with *Reports on Botany by the Ray Society*, pp. 339, 340. In the latter work it is supposed that heat is the most important of all single agents; and though this is probably true, still the influence of humidity is immense. I may mention, as an instance of this, that it has been recently ascertained that the oxygen used by seeds during germination is not always taken from the air, but is obtained by decomposing water. See the curious experiments of Edwards and Colin in Lindley's Botany, Vol. II, pp. 261, 262, London, 1848; and on the direct nourishment which water supplies to vegetables, see Burdach's great work, Traité de Physiologie, Vol. IX, pp. 254, 398.

[3] There is a difference between the watersheds of the eastern and western ranges, which explains this in part, but not entirely; and even if the explanation were more satisfactory than it is, it is too proximate to the phenomenon to have much scientific value, and must itself be referred to higher geological considerations.

is certain that neither in North nor in South America does one considerable river empty itself into the Pacific; while on the opposite side there are numerous rivers, some of enormous magnitude, all of great importance, as the Negro, the La Plata, the San Francisco, the Amazon, the Orinoco, the Mississippi, the Alabama, the St. John, the Potomac, the Susquehanna, the Delaware, the Hudson, and the St. Lawrence. By this vast water system the soil is towards the east constantly irrigated;[1] but towards the west there is in North America only one river of value, the Oregon;[2] while in South America, from the Isthmus of Panama to the Straits of Magellan, there is no great river at all.

But as to the other main cause of fertility, namely, heat, we find in North America a state of things precisely the reverse. There we find that while the irrigation is on the east, the heat is on the west.[3] This difference of temperature between the two coasts is probably connected with some great meteorological law; for in the whole of the northern hemisphere the eastern part of continents and of islands is colder than the western.[4] Whether,

[1] Of this irrigation some idea may be formed from an estimate that the Amazon drains an area of 2,500,000 square miles, that its mouth is ninety-six miles wide, and that it is navigable 2200 miles from its mouth (Somerville's Physical Geography, Vol. I, p. 423). Indeed, it is said in an Essay on the Hydrography of South America (*Journal of Geographical Society*, Vol. II, p. 250), that "with the exception of one short portage of three miles, water flows, and is for the most part navigable, between Buenos Ayres, in 35° south latitude, to the mouth of the Orinoco, in nearly 9° north." See also, on this river system, Vol. V, p. 93; Vol. X, p. 267. In regard to North America, Mr. Rogers (Geology of North America, p. 8, *Report of British Association for 1834*) says, "The area drained by the Mississippi and all its tributaries is computed at 1,099,000 square miles." Compare Richardson's Arctic Expedition, Vol. II, p. 164.

[2] The Oregon, or Columbia, as it is sometimes called, forms a remarkable botanical line, which is the boundary of the Californian flora. See *Reports on Botany by the Ray Society*, p. 113.

[3] For proof that the mean temperature of the western coast of North America is higher than that of the eastern coast, see *Journal of Geographical Society*, Vol. IX, p. 380; Vol. XI, pp. 168, 216; Humboldt, La Nouvelle Espagne, Vol. I, pp. 42, 336; Richardson's Arctic Expedition, Vol. II, pp. 214, 218, 219, 259, 260. This is well illustrated by the botanical fact, that on the west coast the Coniferæ grow as high as 68° or 70° north latitude; while on the east their northern limit is 60°. See an Essay on the Morphology of the Coniferæ, in *Reports on Botany by the Ray Society*, p. 8, which should be compared with Forry on the Climate of the United States and its Endemic Influences, p. 89, New York, 1842.

[4] "Writers on climate have remarked that the eastern coasts of continents in the northern hemisphere have a lower mean temperature than the western

however, this is owing to some large and comprehensive cause, or whether each instance has a cause peculiar to itself, is an alternative, in the present state of knowledge, impossible to decide; but the fact is unquestionable, and its influence upon the early history of America is extremely curious. In consequence of it, the two great conditions of fertility have not been united in any part of the continent north of Mexico. The countries on the one side have wanted heat; those on the other side have wanted irrigation. The accumulation of wealth being thus impeded, the progress of society was stopped; and until, in the sixteenth century, the knowledge of Europe was brought to bear upon America, there is no instance of any people north of the twentieth parallel reaching even that imperfect civilization to which the inhabitants of India and of Egypt easily attained.[1] On the other hand, south of the twentieth parallel the continent suddenly changes its form, and, rapidly contracting, becomes a small strip of land, until it reaches the Isthmus of Panama. This narrow tract was the center of Mexican civilization; and a comparison of the preceding arguments will easily show why such was the case, for the peculiar configuration of the land secured a very large amount of coast, and thus gave to the southern part of North America the character of an island. Hence there arose one of the characteristics of an insular climate, namely, an

coasts" (Richardson on North American Zoölogy, p. 129, *Report of British Association for 1836*). See also *Report for 1841*, p. 28; Davis, China, Vol. III, pp. 140, 141; *Journal of Geographical Society*, Vol. XXII, p. 176.

[1] The little that is known of the early state of the North American tribes has been brought together by Dr. M'Culloh in his learned work, Researches concerning America, pp. 119–146. He says (p. 121) that they "lived together without laws and civil regulations." In that part of the world the population has probably never been fixed; and we now know that the inhabitants of the northeast of Asia have at different times passed over to the northwest of America, as in the case of the Tschuktschi, who are found in both continents. Indeed, Dobell was so struck by the similarity between the North American tribes and some he met with nearly as far west as Tomsk that he believed their origin to be the same. See Dobell's Travels in Kamchatka and Siberia, 1830, Vol. II, p. 112. And on this question of intercourse between the two continents, compare Crantz' History of Greenland, Vol. I, pp. 259, 260, with Richardson's Arctic Expedition, Vol. I, pp. 362, 363, and Prichard's Physical History of Mankind, Vol. IV, pp. 458–463; Vol. V, pp. 371, 378.

increase of moisture, caused by the watery vapor which springs from the sea.[1] While, therefore, the position of Mexico near the equator gave it heat, the shape of the land gave it humidity; and this being the only part of North America in which these two conditions were united, it was likewise the only part which was at all civilized. There can be no doubt that if the sandy plains of California and southern Columbia, instead of being scorched into sterility, had been irrigated by the rivers of the east, or if the rivers of the east had been accompanied by the heat of the west, the result of either combination would have been that exuberance of soil by which, as the history of the world decisively proves, every early civilization was preceded. But inasmuch as, of the two elements of fertility, one was deficient in every part of America north of the twentieth parallel, it followed that, until that line was passed, civilization could gain no resting place; and there never has been found, and we may confidently assert never will be found, any evidence that even a single ancient nation in the whole of that enormous continent was able to make much progress in the arts of life, or organize itself into a fixed and permanent society.

Thus far as to the physical agents which controlled the early destinies of North America. But in reference to South America, a different train of circumstances came into play; for the law by virtue of which the eastern coasts are colder than the western is not only inapplicable to the southern hemisphere but is replaced by another law precisely the reverse. North of the equator the east is colder than the west; south of the equator the east is hotter than the west. If, now, we connect this

[1] From general physical considerations we should suppose a relation between amount of rain and extent of coast; and in Europe, where alone we have extensive meteorological records, the connection has been proved statistically. "If the quantity of rain that falls in different parts of Europe is measured, it is found to be less, other things being equal, as we recede from the seashore" (Kaemtz' Meteorology, 1845, p. 139). Compare pp. 91, 94. Hence, no doubt, the greater rarity of rain as we advance north from Mexico. "Au nord du 20°, surtout depuis les 22° au 30° de latitude, les pluies, qui ne durent que pendant les mois de juin, de juillet, d'août et de septembre, sont peu fréquentes dans l'intérieur du pays" (Humboldt, Nouvelle Espagne, Vol. I, p. 46).

fact with what has been noticed respecting the vast river system which distinguishes the east of America from the west, it becomes evident that in South America there exists that coöperation of heat and humidity in which North America is deficient. The result is, that the soil in the eastern part of South America is remarkable for its exuberance not only within the tropic but considerably beyond it; the south of Brazil, and even part of Uruguay, possessing a fertility not to be found in any country of North America situated under a corresponding latitude.

On a hasty view of the preceding generalizations it might be expected that the eastern side of South America, being thus richly endowed by nature,[1] would have been the seat of those civilizations which, in other parts of the world, similar causes produced. But if we look a little further, we shall find that what has just been pointed out by no means exhausts even the physical bearings of this subject, and that we must take into consideration a third great agent, which has sufficed to neutralize the natural results of the other two, and to retain in barbarism the inhabitants of what otherwise would have been the most flourishing of all the countries of the New World.

The agent to which I allude is the trade wind,—a striking phenomenon, by which, as we shall hereafter see, all the civilizations anterior to those of Europe were greatly and injuriously influenced. This wind covers no less than 56° of latitude,—28° north of the equator and 28° south of it.[2] In this large tract, which comprises some of the most fertile countries in the world, the

[1] Mr. Darwin, who has written one of the most valuable works ever published on South America, was struck by this superiority of the eastern coast; and he mentions that "fruits which ripen well and are very abundant, such as the grape and fig, in latitude 41° on the east coast, succeed very poorly in a lower latitude on the opposite side of the continent" (Darwin's Journal of Researches, p. 268, London, 1840). Compare Meyen's Geography of Plants, pp. 25, 188. So that the proposition of Daniell (Meteorological Essays, p. 104, sec. xiv) is expressed too generally; and should be confined to continents north of the equator.

[2] The trade winds sometimes reach the thirtieth parallel. See Daniell's Meteorological Essays, p. 469. Dr. Traill (Physical Geography, p. 200, Edinburgh, 1838), says, "They extend to about 30° on each side of the equator." But I believe they are rarely found so high, though Robertson is certainly wrong in supposing that they are peculiar to the tropics (History of America, Book IV, in Robertson's Works, p. 781).

trade wind blows, during the whole year, either from the northeast or from the southeast.[1] The causes of this regularity are now well understood, and are known to depend partly on the displacement of air at the equator, and partly on the motion of the earth; for the cold air from the poles is constantly flowing towards the equator, and thus producing northerly winds in the northern hemisphere and southerly winds in the southern. These winds are, however, deflected from their natural course by the movement of the earth, as it revolves on its axis from west to east. And as the rotation of the earth is, of course, more rapid at the equator than elsewhere, it happens that in the neighborhood of the equator the speed is so great as to outstrip the movements of the atmosphere from the poles, and forcing them into another direction, gives rise to those easterly currents which are called trade winds.[2] What, however, we are now rather concerned with is not so much an explanation of the trade winds as an account of the way in which this great physical phenomenon is connected with the history of South America.

The trade wind, blowing on the eastern coast of South America, and proceeding from the east, crosses the Atlantic Ocean, and

[1] "In the northern hemisphere the trade wind blows from the northeast, and in the southern from the southeast" (Meyen's Geography of Plants, p. 42). Compare Walsh's Brazil, Vol. I, p. 112; Vol. II, p. 494; and on the "tropical east wind" of the Gulf of Mexico, see Forry's Climate of the United States, p. 206. Dr. Forry says that it has given to the growth of the trees "an inclination from the sea."

[2] Respecting the causes of the trade winds, see Somerville's Connection of the Physical Sciences, pp. 136, 137; Leslie's Natural Philosophy, p. 518; Daniell's Meteorological Essays, pp. 44, 102, 476–481; Kaemtz' Meteorology, pp. 37–39; Prout's Bridgewater Treatise, pp. 254–256. The discovery of the true theory is often ascribed to Mr. Daniell; but Hadley was the real discoverer. See note in Prout, p. 257. The monsoons, which popular writers frequently confuse with the trade winds, are said to be caused by the predominance of land, and by the difference between its temperature and that of the sea. See Kaemtz, pp. 42–45. On what may be called the conversion of the trades into monsoons, according to the laws very recently promulgated by M. Dove, see *Report of British Association for 1847* (*Transactions of Sections*, p. 30), and *Report for 1848*, p. 94. The monsoons are noticed in Humboldt's Cosmos, Vol. II, p. 485; Asiatic Researches, Vol. XVIII, Part I, p. 261; Thirlwall's History of Greece, Vol. VII, pp. 13, 55; *Journal of Geographical Society*, Vol. II, p. 90; Vol. IV, pp. 8–9, 148, 149, 169; Vol. XI, p. 162; Vol. XV, pp. 146–149; Vol. XVI, p. 185; Vol. XVIII, pp. 67, 68; Vol. XXIII, p. 112; Low's Sarawak, p. 30.

therefore reaches the land surcharged with the vapors accumulated in its passage. These vapors, on touching the shore, are, at periodical intervals, condensed into rain; and as their progress westward is checked by that gigantic chain of the Andes, which they are unable to pass,[1] they pour the whole of their moisture on Brazil, which, in consequence, is often deluged by the most destructive torrents.[2] This abundant supply, being aided by that vast river system peculiar to the eastern part of America, and being also accompanied by heat, has stimulated the soil into an activity unequaled in any other part of the world.[3] Brazil, which is nearly as large as the whole of Europe, is covered with a vegetation of incredible profusion. Indeed, so rank and luxuriant is the growth that nature seems to riot in the very wantonness of power. A great part of this immense country is filled with dense and tangled forests, whose noble trees, blossoming in unrivaled beauty, and exquisite with a thousand hues, throw out their produce in endless prodigality. On their summit are perched birds of gorgeous plumage, which nestle in their dark and lofty recesses. Below, their base and trunks are crowded with brushwood, creeping plants, innumerable parasites, all swarming with life. There, too, are myriads of insects of every variety; reptiles

[1] Lyell's Principles of Geology, pp. 201, 714, 715; see also Somerville's Physical Geography, Vol. II, p. 71. And on this confining power of the Cordillera of the Andes, see Azara, Voyages dans l'Amérique Méridionale, Vol. I, p. 33. According to Dr. Tschudi, the eastern chain is properly the Andes, and the western the Cordilleras; but this distinction is rarely made (Tschudi's Travels in Peru, p. 290).

[2] On the rain of Brazil, see Daniell's Meteorological Essays, p. 335; Darwin's Journal, pp. 11, 33; Spix and Martius' Travels in Brazil, Vol. II, p. 113; Gardner's Travels in Brazil, pp. 53, 99, 114, 175, 233, 394.

[3] Dr. Gardner, who looked at these things with the eye of a botanist, says that near Rio de Janeiro the heat and moisture are sufficient to compensate even the poorest soil, so that "rocks, on which scarcely a trace of earth is to be observed, are covered with vellozias, tillandsias, melastomaceæ, cacti, orchideæ, and ferns, and all in the vigor of life" (Gardner's Travels in Brazil, p. 9). See also on this combination (Walsh's Brazil, Vol. II, pp. 297, 298), a curious description of the rainy season: "For eight or nine hours a day, during some weeks, I never had a dry shirt on me; and the clothes I divested myself of at night I put on quite wet in the morning. When it did not rain, which was very rare, there shone out in some places a burning sun; and we went smoking along, the wet exhaling by the heat as if we were dissolving into vapor."

of strange and singular form; serpents and lizards, spotted with deadly beauty, — all of which find means of existence in this vast workshop and repository of nature. And that nothing may be wanting to this land of marvels, the forests are skirted by enormous meadows, which, reeking with heat and moisture, supply nourishment to countless herds of wild cattle that browse and fatten on their herbage; while the adjoining plains, rich in another form of life, are the chosen abode of the subtlest and most ferocious animals, which prey on each other, but which it might almost seem no human power can hope to extirpate.[1]

Such is the flow and abundance of life by which Brazil is marked above all the other countries of the earth.[2] But amid this pomp and splendor of nature no place is left for man. He is reduced to insignificance by the majesty with which he is surrounded. The forces that oppose him are so formidable that he has never been able to make head against them, never able to rally against their accumulated pressure. The whole of Brazil, notwithstanding its immense apparent advantages, has always remained entirely uncivilized, — its inhabitants wandering savages, incompetent to resist those obstacles which the very bounty of nature had put in their way. For the natives, like every people

[1] On the natural history of Brazil I have compared a few notices in Swainson's Geography of Animals, pp. 75–87, with Cuvier, Règne Animal, Vol. I, p. 460; Vol. II, pp. 28, 65, 66, 89; Vol. IV, pp. 51, 75, 258, 320, 394, 485, 561; Vol. V, pp. 40, 195, 272, 334, 553; Azara, Amérique Méridionale, Vol. I, pp. 244–388, and the greater part of Vols. III and IV; Winckler, Geschichte der Botanik, pp. 378, 576–578; Southey's History of Brazil, Vol. I, p. 27; Vol. III, pp. 315, 823; Gardner's Brazil, pp. 18, 32–34, 41–44, 131, 330; Spix and Martius' Brazil, Vol. I, pp. 207–209, 238–248; Vol. II, pp. 131, 160–163. And as to the forests, which are among the wonders of the world, see Somerville's Physical Geography, Vol. II, pp. 204–206; Prichard's Physical History, Vol. V, p. 497; Darwin's Journal, pp. 11, 24; Walsh's Brazil, Vol. I, p. 145; Vol. II, pp. 29, 30, 253.

[2] This extraordinary richness has excited the astonishment of all who have seen it. Mr. Walsh, who has traveled in some very fertile countries, mentions "the exceeding fecundity of nature which characterizes Brazil" (Walsh's Brazil, Vol. II, p. 19). And a very eminent naturalist, Mr. Darwin, says (Journal, p. 29), "In England, any person fond of natural history enjoys in his walks a great advantage, by always having something to attract his attention; but in these fertile climates, teeming with life, the attractions are so numerous that he is scarcely able to walk at all."

in the infancy of society, are averse to enterprise; and being unacquainted with the arts by which physical impediments are removed, they have never attempted to grapple with the difficulties that stopped their social progress. Indeed, those difficulties are so serious that during more than three hundred years the resources of European knowledge have been vainly employed in endeavoring to get rid of them. Along the coast of Brazil there has been introduced from Europe a certain amount of that civilization which the natives by their own efforts could never have reached. But such civilization, in itself very imperfect, has never penetrated the recesses of the country; and in the interior there is still found a state of things similar to that which has always existed. The people, ignorant, and therefore brutal, practicing no restraint and recognizing no law, continue to live on in their old and inveterate barbarism.[1] In their country the physical causes are so active, and do their work on a scale of such unrivaled magnitude, that it has hitherto been found impossible to escape from the effects of their united action. The progress of agriculture is stopped by impassable forests, and the harvests are destroyed by innumerable insects.[2] The mountains are too high to scale; the rivers are too wide to bridge; everything is contrived

[1] Azara (Amérique Méridionale, Vol. II, pp. 1–168) gives a curious but occasionally a disgusting account of the savage natives in that part of Brazil south of 16°, to which his observations were limited. And as to the inhabitants of other parts, see Henderson's History of Brazil, pp. 28, 29, 107, 173, 248, 315, 473; M'Culloh's Researches concerning America, p. 77; and the more recent account of Dr. Martius, in *Journal of Geographical Society*, Vol. II, pp. 191–199. Even in 1817 it was rare to see a native in Rio de Janeiro (Spix and Martius' Travels in Brazil, Vol. I, p. 142); and Dr. Gardner (Travels in Brazil, pp. 61, 62) says that "more than one nation of Indians in Brazil" have returned to that savage life from which they had apparently been reclaimed.

[2] Sir C. Lyell (Principles of Geology, p. 682) notices "the incredible number of insects which lay waste the crops in Brazil"; and Mr. Swainson, who had traveled in that country, says, "The red ants of Brazil are so destructive, and at the same time so prolific, that they frequently dispute possession of the ground with the husbandman, defy all his skill to extirpate their colonies, and fairly compel him to leave his fields uncultivated" (Swainson on the Geography and Classification of Animals, p. 87). See more about these insects in Darwin's Journal, pp. 37–43; Southey's History of Brazil, Vol. I, pp. 144, 256, 333–335, 343; Vol. II, pp. 365, 642; Vol. III, p. 876; Spix and Martius' Travels in Brazil, Vol. I, p. 259; Vol. II, p. 117; Cuvier, Règne Animal, Vol. IV, p. 320.

to keep back the human mind and repress its rising ambition. It is thus that the energies of nature have hampered the spirit of man. Nowhere else is there so painful a contrast between the grandeur of the external world and the littleness of the internal. And the mind, cowed by this unequal struggle, has not only been unable to advance, but without foreign aid it would undoubtedly have receded. For even at present, with all the improvements constantly introduced from Europe, there are no signs of real progress; while notwithstanding the frequency of colonial settlements, less than one fiftieth of the land is cultivated.[1] The habits of the people are as barbarous as ever; and as to their numbers, it is well worthy of remark that Brazil, the country where, of all others, physical resources are most powerful, where both vegetables and animals are most abundant, where the soil is watered by the noblest rivers, and the coast studded by the finest harbors, — this immense territory, which is more than twelve times the size of France, contains a population not exceeding six millions of people.[2]

These considerations sufficiently explain why it is that in the whole of Brazil there are no monuments even of the most imperfect civilization; no evidence that the people had, at any period, raised themselves above the state in which they were found when their country was first discovered. But immediately opposite to Brazil there is another country, which, though situated in the same continent and lying under the same latitude, is subjected to different physical conditions, and therefore was the scene of different social results. This is the celebrated kingdom of Peru,

[1] The cultivated land is estimated at from 1¼ to 2 per cent. See M'Culloch's Geographical Dictionary, 1849, Vol. I, p. 430.

[2] During the present century the population of Brazil has been differently stated at different times, the highest computation being seven million, and the lowest four million. Compare Humboldt, Nouvelle Espagne, Vol. II, p. 855; Gardner's Brazil, p. 12; M'Culloch's Geographical Dictionary, 1849, Vol. I, pp. 430, 434. Mr. Walsh describes Brazil as "abounding in lands of the most exuberant fertility, but nearly destitute of inhabitants" (Walsh's Brazil, Vol. I, p. 248). This was in 1828 and 1829, since which the European population has increased; but, on the whole, six million seems to be a fair estimate of what can only be known approximately. In Alison's History, Vol. X, p. 229, the number given is five million, but the area also is rather understated.

which included the whole of the southern tropic, and which, from the circumstances just stated, was naturally the only part of South America where anything approaching to civilization could be attained. In Brazil the heat of the climate was accompanied by a twofold irrigation, arising first, from the immense river system incidental to the eastern coast; and secondly, from the abundant moisture deposited by the trade winds. From this combination there resulted that unequaled fertility which, so far as man was concerned, defeated its own ends, stopping his progress by an exuberance which, had it been less excessive, it would have aided. For, as we have clearly seen, when the productive powers of nature are carried beyond a certain point, the imperfect knowledge of uncivilized men is unable to cope with them, or in any way turn them to their own advantage. If, however, those powers, being very active, are nevertheless confined within manageable limits, there arises a state of things similar to that noticed in Asia and Africa, where the profusion of nature, instead of hindering social progress, favored it, by encouraging that accumulation of wealth, without some share of which progress is impossible.

In estimating, therefore, the physical conditions by which civilization was originally determined, we have to look, not merely at the exuberance, but also at what may be called the manageability of nature; that is, we have to consider the ease with which the resources may be used as well as the number of the resources themselves. Applying this to Mexico and Peru, we find that they were the countries of America where this combination most happily occurred. For though their resources were much less numerous than those of Brazil, they were far more easy to control, while at the same time the heat of the climate brought into play those other laws by which, as I have attempted to show, all the early civilizations were greatly influenced. It is a very remarkable fact, which, I believe, has never been observed, that even in reference to latitude the present limit of Peru to the south corresponds with the ancient limit of Mexico to the north; while, by a striking but to me perfectly natural coinci dence, both these boundaries are reached before the tropical line

is passed, the boundary of Mexico being 21° north latitude, that of Peru 21½° south latitude.[1]

Such is the wonderful regularity which history, when comprehensively studied, presents to our view. And if we compare Mexico and Peru with those countries of the Old World which have been already noticed, we shall find, as in all the civilizations anterior to those of Europe, that their social phenomena were subordinate to their physical laws. In the first place, the characteristics of their national food were precisely those met with in the most flourishing parts of Asia and Africa. For although few of the nutritious vegetables belonging to the Old World were found in the New, their place was supplied by others exactly analogous to rice and dates,—that is to say, marked by the same abundance, by the same facility of growth, and by the same exuberant returns, therefore followed by the same social results. In Mexico and Peru one of the most important articles of food has always been maize, which we have every reason to believe was peculiar to the American continent.[2] This, like rice and dates, is eminently the product of a hot climate; and although it is said to grow at an elevation of upwards of seven thousand feet,[3]

[1] Vidica being the most southerly point of the present Peruvian coast; though the conquests of Peru, incorporated with the empire, extended far into Chili, and within a few degrees of Patagonia. In regard to Mexico, the northern limit of the empire was 21° on the Atlantic coast, and 19° on the Pacific (Prescott's History of Mexico, Vol. I, p. 2).

[2] A question has been raised as to the Asiatic origin of maize (Reynier, Économie des Arabes, pp. 94, 95). But later and more careful researches seem to have ascertained beyond much doubt that it was unknown before America was discovered. Compare Meyen's Geography of Plants, pp. 44, 303, 304; Walckenaer's note in Azara, Amérique Méridionale, Vol. I, p. 149; Cuvier, Progrès des Sciences Naturelles, Vol. II, p. 354; Cuvier, Éloges Historiques, Vol. II, p. 178; Loudon's Encyclopædia of Agriculture, p. 829; M'Culloch's Dictionary of Commerce, 1849, p. 831. The casual notices of maize by Ixtlilxochitl, the native Mexican historian, shows its general use as an article of food before the arrival of the Spaniards. See Ixtlilxochitl, Histoire des Chichimèques, Vol. I, pp. 53, 64, 240; Vol. II, p. 19.

[3] "Maize, indeed, grows to the height of seventy-two hundred feet above the level of the sea, but only predominates between three thousand and six thousand of elevation" (Lindley's Vegetable Kingdom, 1847, p. 112). This refers to the tropical parts of South America; but the Zea Mais is said to have been raised on the slopes of the Pyrenees "at an elevation of three thousand to four thousand feet." See Austen on the Forty Days' Maize, in *Report of British Association for 1849, Transactions of Sections*, p. 68.

it is rarely seen beyond the fortieth parallel,[1] and its exuberance rapidly diminishes with the diminution of temperature. Thus, for example, in New California its average yield is seventy or eighty fold;[2] but in Mexico proper the same grain yields three or four hundred fold, and, under very favorable circumstances, even eight hundred fold.[3]

A people who derived their sustenance from a plant of such extraordinary fecundity had little need to exercise their industrious energies; while at the same time they had every opportunity of increasing their numbers, and thus producing a train of social and political consequences similar to those which I have noticed in India and in Egypt. Besides this, there were, in addition to maize, other kinds of food to which the same remarks are applicable. The potato, which in Ireland has brought about such injurious effects by stimulating the growth of population, is said to be indigenous to Peru; and although this is denied by a very high authority,[4] there is, at all events, no doubt that it was found there in great abundance when the country was first discovered

[1] M. Meyen (Geography of Plants, p. 302) and Mr. Balfour (Botany, p. 567) suppose that in America 40° is about its limit; and this is the case in regard to its extensive cultivation; but it is grown certainly as high as 52°, perhaps as high as 54°, north latitude. See Richardson's Arctic Expedition, 1851, Vol. II, pp. 49, 224.

[2] "Sous la zone tempérée, entre les 33e et 38e degrés de latitude, par exemple dans la Nouvelle Californie, le maïs ne produit, en général, année commune, que 70 à 80 grains pour un" (Humboldt, Nouvelle Espagne, Vol. II, p. 375).

[3] "La fécondité du Tlaolli, ou maïs mexicain, est au-delà de tout ce que l'on peut imaginer en Europe. La plante, favorisée par de fortes chaleurs et par beaucoup d'humidité, acquiert une hauteur de deux à trois mètres. Dans les belles plaines qui s'étendent depuis San Juan del Rio à Queretaro, par exemple dans les terres de la grande métairie de l'Esperanza, une fanègue de maïs en produit quelquefois huit cents. Des terrains fertiles en donnent, année commune, trois à quatre cents" (Humboldt, Nouvelle Espagne, Vol. II, p. 374). Nearly the same estimate is given by Mr. Ward. See Ward's Mexico, Vol. I, p. 32; Vol. II, p. 230. In Central America (Guatemala) maize returns three hundred for one (Mexique et Guatemala, par Larenaudière, p. 257).

[4] "La pomme de terre n'est pas indigène au Pérou" (Humboldt, Nouvelle Espagne, Vol. II, p. 400). On the other hand, Cuvier (Histoire des Sciences Naturelles, Part II, p. 185) peremptorily says, "Il est impossible de douter qu'elle ne soit originaire du Pérou." See also his Éloges Historiques, Vol. II, p. 171. Compare Winckler, Gesch. der Botanik, p. 92: "Von einem gewissen Çarate unter den Gewächsen Peru's mit dem Namen papas aufgeführt."

by the Europeans.[1] In Mexico potatoes were unknown till the arrival of the Spaniards; but both Mexicans and Peruvians lived to a great extent on the produce of the banana, — a vegetable whose reproductive powers are so extraordinary that nothing but the precise and unimpeachable testimony of which we are possessed could make them at all credible. This remarkable plant is, in America, intimately connected with the physical laws of climate, since it is an article of primary importance for the subsistence of man whenever the temperature passes a certain point.[2] Of its nutritive powers it is enough to say that an acre sown with it will support more than fifty persons; whereas the same amount of land sown with wheat in Europe will only support two persons.[3] As to the exuberance of its growth, it is calculated that, other circumstances remaining the same, its produce is forty-four times greater than that of potatoes, and a hundred and thirty-three times greater than that of wheat.[4]

It will now be easily understood why it was that, in all important respects, the civilizations of Mexico and Peru were strictly analogous to those of India and Egypt. In these four countries, as well as in a few others in southern Asia and Central America, there existed an amount of knowledge, despicable indeed if tried

[1] And has been used ever since for food. On the Peruvian potato, compare Tschudi's Travels in Peru, pp. 178, 368, 386; Ulloa's Voyage to South America, Vol. I, pp. 287, 288. In southern Peru, at the height of thirteen thousand or fourteen thousand feet, a curious process takes place, the starch of the potato being frozen into saccharine. See a valuable paper by Mr. Bollaert in *Journal of Geographical Society*, Vol. XXI, p. 119.

[2] Humboldt (Nouvelle Espagne, Vol. II, p. 359) says, "Partout où la chaleur moyenne de l'année excède vingt-quatre degrés centigrades, le fruit du bananier est un objet de culture du plus grand intérêt pour la subsistance de l'homme." Compare Bullock's Mexico, p. 281.

[3] M'Culloch's Geographical Dictionary, 1849, Vol. II, p. 315.

[4] "Je doute qu'il existe une autre plante sur le globe, qui, sur un petit espace de terrain, puisse produire une masse de substance nourrissante aussi considérable." . . . "Le produit des bananes est par conséquent à celui du froment comme 133 : 1 — à celui des pommes de terre comme 44 : 1" (Humboldt, Nouvelle Espagne, Vol. II, pp. 362, 363). See also Prout's Bridgewater Treatise, p. 333, edit. 1845; Prescott's Peru, Vol. I, pp. 131, 132; Prescott's Mexico, Vol. I, p. 114. Earlier notices, but very imperfect ones, of this remarkable vegetable may be found in Ulloa's South America, Vol. I, p. 74; and in Boyle's Works, Vol. III, p. 590.

by an European standard, but most remarkable if contrasted with the gross ignorance which prevailed among the adjoining and contemporary nations. But in all of them there was the same inability to diffuse even that scanty civilization which they really possessed; there was the same utter absence of anything approaching to the democratic spirit; there was the same despotic power on the part of the upper classes, and the same contemptible subservience on the part of the lower. For, as we have clearly seen, all these civilizations were affected by certain physical causes, which, though favorable to the accumulation of wealth, were unfavorable to a just subdivision of it. And as the knowledge of men was still in its infancy,[1] it was found impossible to struggle against these physical agents, or prevent them from producing those effects on the social organization which I have attempted to trace. Both in Mexico and in Peru the arts, and particularly those branches of them which minister to the luxury of the wealthy classes, were cultivated with great success. The houses of the higher ranks were filled with ornaments and utensils of admirable workmanship; their chambers were hung with splendid tapestries; their dresses and their personal decorations betrayed an almost incredible expense; their jewels were of exquisite and varied form; their rich and flowing robes embroidered with the rarest feathers, collected from the most distant parts of the empire, — all supplying evidence of the possession of unlimited wealth, and of the ostentatious prodigality with which that wealth was wasted.[2] Immediately below this class came the people; and

[1] The only science with which they had much acquaintance was astronomy, which the Mexicans appear to have cultivated with considerable success. Compare the remark of La Place, in Humboldt, Nouvelle Espagne, Vol. I, p. 92, with Prichard's Physical History, Vol. V, pp. 323, 329; M'Culloh's Researches, pp. 201–225; Larenaudière's Mexique, pp. 51, 52; Humboldt's Cosmos, Vol. IV, p. 456; *Journal of Geographical Society*, Vol. VII, p. 3. However, their astronomy, as might be expected, was accompanied by astrology. See Ixtlilxochitl, Histoire des Chichimèques, Vol. I, p. 168; Vol. II, p. 94, 111.

[2] The works of art produced by the Mexicans and Peruvians are underrated by Robertson, who, however, admits that he had never seen them (History of America, Book VII, in Robertson's Works, pp. 909, 920). But during the present century considerable attention has been paid to this subject; and in addition to the evidence of skill and costly extravagance collected by Mr. Prescott (History

what their condition was may be easily imagined. In Peru the whole of the taxes were paid by them, the nobles and the clergy being altogether exempt.[1] But as in such a state of society it was impossible for the people to accumulate property, they were obliged to defray the expenses of government by their personal labor, which was placed under the entire command of the state.[2] At the same time the rulers of the country were well aware that, with a system like this, feelings of personal independence were incompatible; they therefore contrived laws by which, even in the most minute matters, freedom of action was controlled. The people were so shackled that they could neither change their residence nor alter their clothes without permission from the governing powers. To each man the law prescribed the trade he was to follow, the dress he was to wear, the wife he was to marry, and the amusements he was to enjoy.[3] Among the Mexicans the

of Peru, Vol. I, pp. 28, 142; History of Mexico, Vol. I, pp. 27, 28, 122, 256, 270, 307; Vol. II, pp. 115, 116), I may refer to the testimony of M. Humboldt, the only traveler in the New World who has possessed a competent amount of physical as well as historical knowledge (Humboldt, Nouvelle Espagne, Vol. II, p. 483, and elsewhere). Compare Mr. Pentland's observation on the tombs in the neighborhood of Titicaca (*Journal of Geographical Society*, Vol. X, p. 554) with M'Culloh's Researches, pp. 364–366; Larenaudière's Mexique, pp. 41, 42, 66; Ulloa's South America, Vol. I, pp. 465, 466.

[1] "The members of the royal house, the great nobles, even the public functionaries, and the numerous body of the priesthood, were all exempt from taxation. The whole duty of defraying the expenses of the government belonged to the people" (Prescott's History of Peru, Vol. I, p. 56).

[2] Ondegardo emphatically says, "Solo el trabajo de las personas era el tributo que se dava, porque ellos no poseian otra cosa" (Prescott's Peru, Vol. I, p. 57). Compare M'Culloh's Researches, p. 359. In Mexico the state of things was just the same: "Le petit peuple, qui ne possédait point de biens-fonds, et qui ne faisait point de commerce, payait sa part des taxes en travaux de différents genres; c'était par lui que les terres de la couronne étaient cultivées, les ouvrages publics exécutés, et les diverses maisons appartenantes à l'empereur construites ou entretenues" (Larenaudière's Mexique, p. 39).

[3] Mr. Prescott notices this with surprise, though, under the circumstances, it was in truth perfectly natural. He says (History of Peru, Vol. I, p. 159), "Under this extraordinary polity a people, advanced in many of the social refinements, well skilled in manufactures and agriculture, were unacquainted, as we have seen, with money. They had nothing that deserved to be called property. They could follow no craft, could engage in no labor, no amusement, but such as was specially provided by law. They could not change their residence or their dress without a license

course of affairs was similar, the same physical conditions being followed by the same social results. In the most essential particular for which history can be studied, namely, the state of the people, Mexico and Peru are the counterpart of each other. For though there were many minor points of difference,[1] both were agreed in this, that there were only two classes, — the upper class being tyrants, and the lower class being slaves. This was the state in which Mexico was found when it was discovered by the Europeans,[2] and towards which it must have been tending from the earliest period. And so insupportable had all this become that we know, from the most decisive evidence, that the general disaffection it produced among the people was one of the causes which, by facilitating the progress of the Spanish invaders, hastened the downfall of the Mexican empire.[3]

The further this examination is carried, the more striking becomes the similarity between those civilizations which flourished anterior to what may be called the European epoch of the human mind. The division of a nation into castes would be impossible in the great European countries; but it existed from a remote antiquity in Egypt, in India, and apparently in Persia.[4] The very

from the government. They could not even exercise the freedom which is conceded to the most abject in other countries, — that of selecting their own wives."

[1] The Mexicans being, as Prichard says (Physical History, Vol. V, p. 467), of a more cruel disposition than the Peruvians; but our information is too limited to enable us to determine whether this was mainly owing to physical causes or to social ones. Herder preferred the Peruvian civilization, "der gebildetste Staat dieses Welttheils, Peru" (Ideen zur Geschichte der Menschheit, Vol. I, p. 33).

[2] See in Humboldt, Nouvelle Espagne, Vol. I, p. 101, a striking summary of the state of the Mexican people at the time of the Spanish conquest. See also History of America, Book VII, in Robertson's Works, p. 907.

[3] Prescott's History of the Conquest of Mexico, Vol. I, p. 34. Compare a similar remark on the invasion of Egypt in Bunsen's Egypt, Vol. II, p. 414.

[4] That there were castes in Persia is stated by Firdausi; and his assertion, putting aside its general probability, ought to outweigh the silence of the Greek historians, who, for the most part, knew little of any country except their own. According to Malcolm, the existence of caste in the time of Jemsheed, is confirmed by "some Mahometan authors"; but he does not say who they were (Malcolm's History of Persia, Vol. I, pp. 505, 506). Several attempts have been made, but very unsuccessfully, to ascertain the period in which castes were first instituted. Compare Asiatic Researches, Vol. VI, p. 251; Heeren's African Nations, Vol. II, p. 121; Bunsen's Egypt, Vol. II, p. 410; Rammohun Roy on the Veds, p. 269.

same institution was rigidly enforced in Peru;[1] and what proves how consonant it was to that stage of society is that in Mexico, where castes were not established by law, it was nevertheless a recognized custom that the son should follow the occupation of his father.[2] This was the political symptom of that stationary and conservative spirit, which, as we shall hereafter see, has marked every country in which the upper classes have monopolized power. The religious symptom of the same spirit was displayed in that inordinate reverence for antiquity, and in that hatred of change, which the greatest of all the writers on America has well pointed out as an analogy between the natives of Mexico and those of Hindustan.[3] To this may be added, that those who have studied the history of the ancient Egyptians have observed among that people a similar tendency. Wilkinson, who is well known to have paid great attention to their monuments, says that they were more unwilling than any other nation to alter their religious worship;[4] and Herodotus, who traveled in their

[1] Prescott's History of Peru, Vol. I, pp. 143, 156.

[2] Prescott's History of Mexico, Vol. I, p. 124.

[3] "Les Américains, comme les habitants de l'Indoustan, et comme tous les peuples qui ont gémi longtemps sous le despotisme civil et religieux, tiennent avec une opiniâtreté extraordinaire à leurs habitudes, à leurs mœurs, à leurs opinions. . . . Au Mexique, comme dans l'Indoustan, il n'était pas permis aux fidèles de changer la moindre chose aux figures des idoles. Tout ce qui appartenait au rite des Aztèques et des Hindous étoit assujéti à des lois immuables" (Humboldt, Nouvelle Espagne, Vol. I, pp. 95, 97). Turgot (Œuvres, Vol. II, pp. 226, 313, 314) has some admirable remarks on this fixity of opinion natural to certain states of society. See also Herder's Ideen zur Geschichte, Vol. III, pp. 34, 35; and for other illustrations of this unpliancy of thought, and adherence to old customs, which many writers suppose to be an eastern peculiarity, but which is far more widely spread, and is, as Humboldt clearly saw, the result of an unequal distribution of power, compare Turner's Embassy to Tibet, p. 41; Forbes' Oriental Memoirs, Vol. I, pp. 15, 164; Vol. II, p. 236; Mill's History of India, Vol. II, p. 214; Elphinstone's History of India, p. 48; Otter's Life of Clarke, Vol. II, p. 109; *Transactions of Asiatic Society*, Vol. II, p. 64; *Journal of Asiatic Society*, Vol. VIII, p. 116.

[4] "How scrupulous the Egyptians were, above all people, in permitting the introduction of new customs in matters relating to the gods" (Wilkinson's Ancient Egyptians, Vol. III, p. 262). Compare p. 275. Thus, too, M. Bunsen notices "the tenacity with which the Egyptians adhered to old manners and customs" (Bunsen's Egypt, Vol. II, p. 64). See also some remarks on the difference between this spirit and the love of novelty among the Greeks, in Ritter's History of Ancient Philosophy, Vol. IV, pp. 625, 626.

country twenty-three hundred years ago, assures us that while they preserved old customs they never acquired new ones.[1] In another point of view, the similarity between these distant countries is equally interesting, since it evidently arises from the causes already noticed as common to both. In Mexico and Peru the lower classes being at the disposal of the upper, there followed that frivolous waste of labor which we have observed in Egypt, and evidence of which may also be seen in the remains of those temples and palaces that are still found in several parts of Asia. Both Mexicans and Peruvians erected immense buildings, which were as useless as those of Egypt, and which no country could produce, unless the labor of the people were ill paid and ill directed.[2] The cost of these monuments of vanity is unknown; but it must have been enormous, since the Americans, being ignorant of the use of iron,[3] were unable to employ a resource by which, in the construction of large works, labor is greatly abridged. Some particulars, however, have been preserved, from which an idea may be formed on this subject. To take, for instance, the palaces of their kings, we find that in Peru the erection of the royal residence occupied, during fifty years, twenty thousand men;[4] while that of Mexico cost the labor of no less than two hundred thousand, — striking facts, which, if all other testimonies had perished, would enable us to appreciate the

[1] Herodotus, Book II, chap. 79: *πατρίοισι δὲ χρεώμενοι νόμοισι, ἄλλον οὐδένα ἐπικτέωνται*: and see the note in Baehr, Vol. I, p. 660: "*νόμους* priores interpretes explicarunt *cantilenas, hymnos;* Schweighæuserus rectius intellexit *instituta ac mores.*" In the same way, in Timæus, Plato represents an Egyptian priest saying to Solon, "Ἕλληνες *ἀεὶ παῖδές ἐστε, γέρων δὲ* Ἕλλην *οὐκ ἔστιν.* And when Solon asked what he meant, Νέοι *ἐστέ*, was the reply, *τὰς ψυχὰς πάντες· οὐδεμίαν γὰρ ἐν αὑταῖς ἔχετε δι' ἀρχαίαν ἀκοὴν παλαιὰν δόξαν οὐδὲ μάθημα χρόνῳ πολιὸν οὐδέν.* Platonis Opera, Vol. VII, chap. v. p. 242, edit. Bekker, London, 1826.

[2] The Mexicans appear to have been even more wantonly prodigal than the Peruvians. See, respecting their immense pyramids, one of which, Cholula, had a base "twice as broad as the largest Egyptian pyramid," M'Culloh's Researches, pp. 252, 256; Bullock's Mexico, pp. 111–115, 414; Humboldt, Nouvelle Espagne, Vol. I, pp. 240, 241.

[3] Prescott's History of Mexico, Vol. I, p. 117; Vol. III, p. 341; and Prescott's History of Peru, Vol. I, p. 145. See also Haüy, Traité de Minéralogie, Paris, 1801, Vol. IV, p. 372.

[4] Prescott's History of Peru, Vol. I, p. 18.

condition of countries in which, for such insignificant purposes, such vast power was expended.[1]

The preceding evidence, collected from sources of unquestioned credibility, proves the force of those great physical laws, which, in the most flourishing countries out of Europe, encouraged the accumulation of wealth, but prevented its dispersion, and thus secured to the upper classes a monopoly of one of the most important elements of social and political power. The result was, that in all those civilizations the great body of the people derived no benefit from the national improvements; hence, the basis of the progress being very narrow, the progress itself was very insecure.[2] When, therefore, unfavorable circumstances arose from without, it was but natural that the whole system should fall to the ground. In such countries society, being divided against itself, was unable to stand. And there can be no doubt that long before the crises of their actual destruction, these one-sided and irregular civilizations had begun to decay, so that their own degeneracy aided the progress of foreign invaders and secured the overthrow of those ancient kingdoms, which, under a sounder system, might have been easily saved.

Thus far as to the way in which the great civilizations exterior to Europe have been affected by the peculiarities of their food,

[1] Mr. Prescott (History of Mexico, Vol. I, p. 153) says: "We are not informed of the time occupied in building this palace, but two hundred thousand workmen, it is said, were employed on it. However this may be, it is certain that the Tezcucan monarchs, like those of Asia and ancient Egypt, had the control of immense masses of men, and would sometimes turn the whole population of a conquered city, including the women, into the public works. The most gigantic monuments of architecture which the world has witnessed would never have been reared by the hands of freemen." The Mexican historian, Ixtlilxochitl, gives a curious account of one of the royal palaces. See his Histoire des Chichimèques, translated by Ternaux-Compans, Paris, 1840, Vol. I, chap. xxxvii, pp. 257–262.

[2] This may be illustrated by a good remark of M. Matter, to the effect that when the Egyptians had once lost their race of kings, it was found impossible for the nation to reconstruct itself (Matter, Histoire de l'École d'Alexandrie, Vol. I, p. 68; a striking passage). In Persia, again, when the feeling of loyalty decayed, so also did the feeling of national power (Malcolm's History of Persia, Vol. II, p. 130). The history of the most civilized parts of Europe presents a picture exactly the reverse of this.

climate, and soil. It now remains for me to examine the effect of those other physical agents to which I have given the collective name of Aspects of Nature, and which will be found suggestive of some very wide and comprehensive inquiries into the influence exercised by the external world in predisposing men to certain habits of thought, and thus giving a particular tone to religion, arts, literature, and, in a word, to all the principal manifestations of the human mind. To ascertain how this is brought about forms a necessary supplement to the investigations just concluded. For, as we have seen that climate, food, and soil mainly concern the accumulation and distribution of wealth, so also shall we see that the Aspects of Nature concern the accumulation and distribution of thought. In the first case, we have to do with the material interests of man; in the other case, with his intellectual interests. The former I have analyzed as far as I am able, and perhaps as far as the existing state of knowledge will allow.[1] But the other, namely, the relation between the Aspects of Nature and the mind of Man, involves speculations of such magnitude, and requires such a mass of materials drawn from every quarter, that I feel very apprehensive as to the result; and I need hardly say that I make no pretensions to anything approaching an exhaustive analysis, nor can I hope to do more than generalize a few of the laws of that complicated but as yet unexplored process by which the external world has affected the human mind, has warped its natural movements, and too often checked its natural progress.

The Aspects of Nature, when considered from this point of view, are divisible into two classes: the first class being those which are most likely to excite the imagination; and the other class being those which address themselves to the understanding commonly so called, that is, to the mere logical operations of the intellect. For although it is true that, in a complete and well-balanced mind, the imagination and the understanding each play their respective parts, and are auxiliary to each other, it is also

[1] I mean, in regard to the physical and economical generalizations. As to the literature of the subject, I am conscious of many deficiencies, particularly in respect to the Mexican and Peruvian histories.

true that, in a majority of instances, the understanding is too weak to curb the imagination and restrain its dangerous license. The tendency of advancing civilization is to remedy this disproportion, and invest the reasoning powers with that authority which, in an early stage of society, the imagination exclusively possesses. Whether or not there is ground for fearing that the reaction will eventually proceed too far, and that the reasoning faculties will in their turn tyrannize over the imaginative ones, is a question of the deepest interest; but in the present condition of our knowledge it is probably an insoluble one. At all events, it is certain that nothing like such a state has yet been seen; since even in this age, when the imagination is more under control than in any preceding one, it has far too much power, as might be easily proved not only from the superstitions which in every country still prevail among the vulgar, but also from that poetic reverence for antiquity which, though it has been long diminishing, still hampers the independence, blinds the judgment, and circumscribes the originality of the educated classes.

Now, so far as natural phenomena are concerned, it is evident that whatever inspires feelings of terror, or of great wonder, and whatever excites in the mind an idea of the vague and uncontrollable, has a special tendency to inflame the imagination and bring under its dominion the slower and more deliberate operations of the understanding. In such cases, man, contrasting himself with the force and majesty of nature, becomes painfully conscious of his own insignificance. A sense of inferiority steals over him. From every quarter innumerable obstacles hem him in and limit his individual will. His mind, appalled by the indefined and indefinable, hardly cares to scrutinize the details of which such imposing grandeur consists.[1] On the other hand, where the works

[1] The sensation of fear, even when there is no danger, becomes strong enough to destroy the pleasure that would otherwise be felt. See, for instance, a description of the great mountain boundary of Hindustan, in Asiatic Researches, Vol. XI, p. 469: "It is necessary for a person to place himself in our situation before he can form a just conception of the scene. The depth of the valley below, the progressive elevation of the intermediate hills, and the majestic splendor of the cloud-capt Himalaya, formed so grand a picture that the mind was impressed with a sensation of dread rather than of pleasure." Compare Vol. XIV, p. 116,

of nature are small and feeble, man regains confidence: he seems more able to rely on his own power; he can, as it were, pass through, and exercise authority in every direction. And as the phenomena are more accessible, it becomes easier for him to experiment on them, or to observe them with minuteness; an inquisitive and analytic spirit is encouraged, and he is tempted to generalize the appearances of nature, and refer them to the laws by which they are governed.

Looking in this way at the human mind as affected by the Aspects of Nature, it is surely a remarkable fact that all the great early civilizations were situated within and immediately adjoining the tropics, where those aspects are most sublime, most terrible, and where nature is, in every respect, most dangerous to man. Indeed, generally, in Asia, Africa, and America the external world is more formidable than in Europe. This holds good not only of the fixed and permanent phenomena, such as mountains and other great natural barriers, but also of occasional phenomena, such as earthquakes, tempests, hurricanes, pestilences, — all of which are in those regions very frequent and very disastrous. These constant and serious dangers produce effects analogous to those caused by the sublimity of nature, in so far that in both cases there is a tendency to increase the activity of the imagination. For the peculiar province of the imagination being to deal with the unknown, every event which is unexplained as well as important is a direct stimulus to our imaginative faculties. In the tropics events of this kind are more numerous than elsewhere; it therefore follows that in the tropics the imagination is most likely to triumph. A few illustrations of the working of this principle will place it in a clearer light, and will prepare the reader for the arguments based upon it.

Of those physical events which increase the insecurity of man, earthquakes are certainly among the most striking, in regard to the loss of life which they cause, as also in regard to their sudden and unexpected occurrence. There is reason to believe that they

Calcutta, 1822. In the Tyrol it has been observed that the grandeur of the mountain scenery imbues the minds of the natives with fear, and has caused the invention of many superstitious legends (Alison's Europe, Vol. IX, pp. 79, 80).

are always preceded by atmospheric changes which strike immediately at the nervous system, and thus have a direct physical tendency to impair the intellectual powers.[1] However this may be, there can be no doubt as to the effect they produce in encouraging particular associations and habits of thought. The terror which they inspire excites the imagination even to a painful extent, and, overbalancing the judgment, predisposes men to superstitious fancies. And what is highly curious is that repetition, so far from blunting such feelings, strengthens them. In Peru, where earthquakes appear to be more common than in any other country,[2] every succeeding visitation increases the general dismay, so that, in some cases, the fear becomes almost insupportable.[3] The mind is thus constantly thrown into a timid and

[1] "Une augmentation d'électricité s'y manifeste aussi presque toujours, et ils sont généralement annoncés par le mugissement des bestiaux, par l'inquiétude des animaux domestiques, et dans les hommes par cette sorte de malaise qui, en Europe, précède les orages dans les personnes nerveuses" (Cuvier, Progrès des Sciences, Vol. I, p. 265). See also on this "Vorgefühl," the observation of Von Hoff, in Mr. Mallet's valuable essay on earthquakes (*British Association for 1850*, p. 68); and the "foreboding" in Tschudi's Peru, p. 165; and a letter in Nichols' Illustrations of the Eighteenth Century, Vol. IV, p. 504. The probable connection between earthquakes and electricity is noticed in Bakewell's Geology, p. 434.

[2] "Peru is more subject, perhaps, than any other country to the tremendous visitation of earthquakes" (M'Culloch's Geographical Dictionary, 1849, Vol. II, p. 499). Dr. Tschudi (Travels in Peru, p. 162) says of Lima, "At an average forty-five shocks may be counted on in the year." See also on the Peruvian earthquakes, pp. 43, 75, 87, 90.

[3] A curious instance of association of ideas conquering the deadening effect of habit. Dr. Tschudi (Peru, p. 170), describing the panic, says, "No familiarity with the phenomenon can blunt this feeling." Beale (South Sea Whaling Voyage, p. 205, London, 1839) writes, "It is said at Peru that the oftener the natives of the place feel those vibrations of the earth, instead of becoming habituated to them, as persons do who are constantly exposed to other dangers, they become more filled with dismay every time the shock is repeated, so that aged people often find the terror a slight shock will produce almost insupportable." Compare Darwin's Journal, pp. 422, 423. So, too, in regard to Mexican earthquakes, Mr. Ward observes that "the natives are both more sensible than strangers of the smaller shocks, and more alarmed by them" (Ward's Mexico, Vol. II, p. 55). On the physiological effects of the fear caused by earthquakes, see the remarkable statement by Osiander in Burdach, Physiologie comme Science d'Observation, Vol. II, pp. 223, 224. That the fear should be not deadened by familiarity, but increased by it, would hardly be expected by speculative reasoners unacquainted with the evidence; and we find, in fact, that the Pyrrhonists asserted that *οἱ γοῦν σεισμοὶ παρ' οἷς συνεχῶς ἀποτελοῦνται οὐ θαυμάζονται· οὐδ' ὁ ἥλιος, ὅτι καθ' ἡμέραν ὁρᾶται* (Diog. Laert. de Vitis Philos., Lib. IX, segm. 87, Vol. I, p. 591).

anxious state; and men witnessing the most serious dangers, which they can neither avoid nor understand, become impressed with a conviction of their own inability and of the poverty of their own resources.[1] In exactly the same proportion the imagination is aroused, and a belief in supernatural interference actively encouraged. Human power failing, superhuman power is called in; the mysterious and the invisible are believed to be present; and there grow up among the people those feelings of awe and of helplessness on which all superstition is based, and without which no superstition can exist.[2]

Further illustration of this may be found even in Europe, where such phenomena are, comparatively speaking, extremely rare. Earthquakes and volcanic eruptions are more frequent and more destructive in Italy and in the Spanish and Portuguese peninsula than in any other of the great countries; and it is precisely there that superstition is most rife, and the superstitious classes most powerful. Those were the countries where the clergy first established their authority, where the worst corruptions of Christianity took place, and where superstition has during the longest period retained the firmest hold. To this may be added another circumstance, indicative of the connection between these physical phenomena and the predominance of the imagination. Speaking generally, the fine arts are addressed more to the imagination, the sciences to the intellect.[3] Now it is remarkable

[1] Mr. Stephens, who gives a striking description of an earthquake in Central America, emphatically says, "I never felt myself so feeble a thing before" (Stephen's Central America, Vol. I, p. 383). See also the account of the effects produced on the mind by an earthquake, in *Transactions of Society of Bombay*, Vol. III, p. 98, and the note at p. 105.

[2] The effect of earthquakes in encouraging superstition is noticed in Lyell's admirable work, Principles of Geology, p. 492. Compare a myth on the origin of earthquakes in Beausobre, Histoire Critique de Manichée, Vol. I, p. 243.

[3] The greatest men in science, and in fact all very great men, have no doubt been remarkable for the powers of their imagination. But in art the imagination plays a far more conspicuous part than in science; and this is what I mean to express by the proposition in the text. Sir David Brewster, indeed, thinks that Newton was deficient in imagination: "the weakness of his imaginative powers" (Brewster's Life of Newton, 1855, Vol. II, p. 133). It is impossible to discuss so large a question in a note; but to my apprehension no poet, except Dante and Shakespeare, ever had an imagination more soaring and more audacious than that possessed by Sir Isaac Newton.

that all the greatest painters, and nearly all the greatest sculptors, modern Europe has possessed have been produced by the Italian and Spanish peninsulas. In regard to science, Italy has no doubt had several men of conspicuous ability; but their numbers are out of all proportion small compared with her artists and poets. As to Spain and Portugal, the literature of those two countries is eminently poetic, and from their schools have proceeded some of the greatest painters the world has ever seen. On the other hand, the purely reasoning faculties have been neglected, and the whole peninsula, from the earliest period to the present time, does not supply to the history of the natural sciences a single name of the highest merit; not one man whose works form an epoch in the progress of European knowledge.[1]

The manner in which the Aspects of Nature, when they are very threatening, stimulate the imagination,[2] and by encouraging superstition discourage knowledge, may be made still more apparent by one or two additional facts. Among an ignorant people there is a direct tendency to ascribe all serious dangers to supernatural intervention; and a strong religious sentiment being thus aroused,[3] it constantly happens not only that the danger is submitted to, but that it is actually worshiped. This is the case with some of the Hindus in the forests of Malabar;[4]

[1] The remarks made by Mr. Ticknor on the absence of science in Spain might be extended even further than he has done. See Ticknor's History of Spanish Literature, Vol. III, pp. 222, 223. He says (p. 237), that in 1771 the University of Salamanca, being urged to teach the physical sciences, replied, "Newton teaches nothing that would make a good logician or metaphysician, and Gassendi and Descartes do not agree so well with revealed truth as Aristotle does."

[2] In Asiatic Researches, Vol. VI, pp. 35, 36, there is a good instance of an earthquake giving rise to a theological fiction. See also Vol. I, pp. 154–157; and compare Coleman's Mythology of the Hindus, p. 17.

[3] See, for example, Asiatic Researches, Vol. IV, pp. 56–57; Vol. VII, p. 94; and the effect produced by a volcano, in *Journal of Geographical Society*, Vol. V, p. 388. See also Vol. XX, p. 8, and a partial recognition of the principle by Sextus Empiricus, in Tennemann, Geschichte der Philosophie, Vol. I, p. 292. Compare the use the clergy made of a volcanic eruption in Iceland (Wheaton's History of the Northmen, p. 42); and see further Raffles' History of Java, Vol. I, pp. 29, 274, and Tschudi's Peru, pp. 64, 167, 171.

[4] The Hindus in the Iruari forests, says Mr. Edye, "worship and respect everything from which they apprehend danger" (Edye on the Coast of Malabar, in *Journal of Asiatic Society*, Vol. II, p. 337).

and many similar instances will occur to whoever has studied the condition of barbarous tribes.[1] Indeed, so far is this carried that in some countries the inhabitants, from feelings of reverential fear, refuse to destroy wild beasts and noxious reptiles; the mischief these animals inflict being the cause of the impunity they enjoy.[2]

It is in this way that the old tropical civilizations had to struggle with innumerable difficulties unknown to the temperate zone, where European civilization has long flourished. The devastations of animals hostile to man, the ravages of hurricanes, tempests, earthquakes,[3] and similar perils constantly pressed upon them and affected the tone of their national character; for the mere loss of life was the smallest part of the inconvenience. The real mischief was, that there were engendered in the mind

[1] Dr. Prichard (Physical History, Vol. IV, p. 501) says, "The tiger is worshiped by the Hajin tribe in the vicinity of the Garrows or Garudus." Compare *Transactions of Asiatic Society*, Vol. III, p. 66. Among the Garrows themselves this feeling is so strong that "the tiger's nose strung round a woman's neck is considered as a great preservative in childbirth" (Coleman's Mythology of the Hindus, p. 321). The Seiks have a curious superstition respecting wounds inflicted by tigers (Burnes' Bokhara, 1834, Vol. III, p. 140); and the Malasir believe that these animals are sent as a punishment for irreligion (Buchanan's Journey through the Mysore, Vol. II, p. 385).

[2] The inhabitants of Sumatra are, for superstitious reasons, most unwilling to destroy tigers, though they commit frightful ravages (Marsden's History of Sumatra, pp. 149, 254). The Russian account of the Kamtschatkans says, "Besides the above-mentioned gods, they pay a religious regard to several animals from which they apprehend danger" (Grieve's History of Kamtschatka, p. 205). Bruce mentions that in Abyssinia hyenas are considered "enchanters"; and the inhabitants "will not touch the skin of a hyena till it has been prayed over and exorcised by a priest" (Murray's Life of Bruce, p. 472). Allied to this is the respect paid to bears (Erman's Siberia, Vol. I, p. 492; Vol. II, pp. 42, 43); also the extensively diffused worship of the serpent, whose wily movements are well calculated to inspire fear, and therefore rouse the religious feelings. The danger apprehended from noxious reptiles is connected with the Dews of the Zendavesta. See Matter's Histoire du Gnosticisme, Vol. I, p. 380, Paris, 1828.

[3] To give one instance of the extent to which these operate, it may be mentioned that in 1815 an earthquake and volcanic eruption broke forth in Sumbawa, which shook the ground "through an area of one thousand miles in circumference," and the detonations of which were heard at a distance of nine hundred and seventy geographical miles. See Somerville's Connection of the Physical Sciences, p. 283; Hitchcock's Religion of Geology, p. 190; Low's Sarawak, p. 10; Bakewell's Geology, p. 438.

associations which made the imagination predominate over the understanding, which infused into the people a spirit of reverence instead of a spirit of inquiry, and which encouraged a disposition to neglect the investigation of natural causes and ascribe events to the operation of supernatural ones.

Everything we know of those countries proves how active this tendency must have been. With extremely few exceptions, health is more precarious and disease more common in tropical climates than in temperate ones. Now it has been often observed, and indeed is very obvious, that the fear of death makes men more prone to seek supernatural aid than they would otherwise be. So complete is our ignorance respecting another life that it is no wonder if even the stoutest heart should quail at the sudden approach of that dark and untried future. On this subject the reason is perfectly silent; the imagination, therefore, is uncontrolled. The operation of natural causes being brought to an end, supernatural causes are supposed to begin. Hence it is, that whatever increases in any country the amount of dangerous disease has an immediate tendency to strengthen superstition and aggrandize the imagination at the expense of the understanding. This principle is so universal that in every part of the world the vulgar ascribe to the intervention of the Deity those diseases which are peculiarly fatal, and especially those which have a sudden and mysterious appearance. In Europe it used to be believed that every pestilence was a manifestation of the divine anger;[1] and this opinion, though it has long been dying

[1] In the sixteenth century, "Les différentes sectes s'accordèrent néanmoins à regarder les maladies graves et dangereuses comme un effet immédiat de la puissance divine; idée que Fernel contribua encore à répandre davantage. On trouve dans Paré plusieurs passages de la Bible, cités pour prouver que la colère de Dieu est la seule cause de la peste, qu'elle suffit pour provoquer ce fléau, et que sans elle les causes éloignées ne sauraient agir" (Sprengel, Histoire de la Médecine, Vol. III, p. 112). The same learned writer says of the Middle Ages (Vol. II, p. 372), "D'après l'esprit généralement répandu dans ces siècles de barbarie, on croyait la lèpre envoyée d'une manière immédiate par Dieu." See also pp. 145, 346, 431. Bishop Heber says that the Hindus deprive lepers of caste and of the right of possessing property because they are objects of "Heaven's wrath" (Heber's Journey through India, Vol. II, p. 330). On the Jewish opinion, see Le Clerc, Bibliothèque Universelle, Vol. IV, p. 402, Amsterdam, 1702. And as to

away, is by no means extinct even in the most civilized countries.[1] Superstition of this kind will of course be strongest either where medical knowledge is most backward or where disease is most abundant. In countries where both these conditions are fulfilled

the early Christians, see Maury, Légendes Pieuses, p. 68, Paris, 1843; though M. Maury ascribes to "les idées orientales reçues par le christianisme" what is due to the operation of a much wider principle.

[1] Under the influence of the inductive philosophy the theological theory of disease was seriously weakened before the middle of the seventeenth century; and by the middle, or at all events the latter half, of the eighteenth century it had lost all its partisans among scientific men. At present it still lingers on among the vulgar; and traces of it may be found in the writings of the clergy, and in the works of other persons little acquainted with physical knowledge. When the cholera broke out in England attempts were made to revive the old notion; but the spirit of the age was too strong for such efforts to succeed; and it may be safely predicted that men will never return to their former opinions unless they first return to their former ignorance. As a specimen of the ideas which the cholera tended to excite, and of their antagonism to all scientific investigation, I may refer to a letter written in 1832 by Mrs. Grant, a woman of some accomplishments and not devoid of influence (Correspondence of Mrs. Grant, Vol. III, pp. 216, 217, London, 1844), where she states: "It appears to me great presumption to indulge so much as people do in speculation and conjecture about a disease so evidently a peculiar infliction, and different from all other modes of suffering hitherto known." This desire to limit human speculation is precisely the feeling which long retained Europe in darkness, since it effectually prevented those free inquiries to which we are indebted for all the real knowledge we possess. The doubts of Boyle upon this subject supply a curious instance of the transitionary state through which the mind was passing in the seventeenth century, and by which the way was prepared for the great liberating movement of the next age. Boyle, after stating both sides of the question, namely, the theological and the scientific, adds, "And it is the less likely that these sweeping and contagious maladies should be always sent for the punishment of impious men, because I remember to have read in good authors that as some plagues destroyed both men and beasts, so some others did peculiarly destroy brute animals of very little consideration or use to men, as cats, etc.

"Upon these and the like reasons I have sometimes suspected that in the controversy about the origin of the plague, namely whether it be natural or supernatural, neither of the contending parties is altogether in the right, since it is very possible that some pestilences may not break forth without an extraordinary, though perhaps not immediate, interposition of Almighty God, provoked by the sins of men; and yet other plagues may be produced by a tragical concourse of merely natural causes" (Discourse on the Air, in Boyle's Works, Vol. IV, pp. 288, 289). "*Neither of the contending parties is altogether in the right,*"—an instructive passage towards understanding the compromising spirit of the seventeenth century; standing midway, as it did, between the credulity of the sixteenth, and the scepticism of the eighteenth.

the superstition is supreme; and even where only one of the conditions exists the tendency is so irresistible that, I believe, there are no barbarous people who do not ascribe to their good or evil deities not only extraordinary diseases but even many of the ordinary ones to which they are liable.[1]

Here, then, we have another specimen of the unfavorable influence which, in the old civilizations, external phenomena

[1] To the historian of the human mind the whole question is so full of interest that I shall refer in this note to all the evidence I have been able to collect; and whoever will compare the following passages may satisfy himself that there is in every part of the world an intimate relation between ignorance respecting the nature and proper treatment of a disease, and the belief that such disease is caused by supernatural power, and is to be cured by it. Burton's Sindh, p. 146, London, 1851; Ellis' Polynesian Researches, Vol. I, p. 395; Vol. III, pp. 36, 41; Vol. IV, pp. 293, 334, 375; Cullen's Works, Vol. II, pp. 414, 434, Edinburgh, 1827; Esquirol, Maladies Mentales, Vol. I, pp. 274, 482; Cabanis, Rapports du Physique et du Moral, p. 277; Volney, Voyage en Syrie, Vol. I, p. 426; Turner's Embassy to Tibet, p. 104; Syme's Embassy to Ava, Vol. II, p. 211; Ellis' Tour through Hawaii, pp. 282, 283, 332, 333; Renouard, Histoire de la Médecine, Vol. I, p. 398; Broussais, Examen des Doctrines Médicales, Vol. I, pp. 261, 262; Grote's History of Greece, Vol. I, p. 485 (compare p. 251, and Vol. VI, p. 213); Grieve's History of Kamtschatka, p. 217; *Journal of Statistical Society*, Vol. X, p. 10; Buchanan's North American Indians, pp. 256, 257; Halkett's North American Indians, pp. 36, 37, 388, 393, 394; Catlin's North American Indians, Vol. I, pp. 35–41; Briggs' On the Aboriginal Tribes of India, in *Report of British Association for 1850*, p. 172; *Transactions of Society of Bombay*, Vol. II, p. 30; Percival's Ceylon, p. 201; Buchanan's Journey through the Mysore, Vol. II, pp. 27, 152, 286, 528; Vol. III, pp. 23, 188, 253 (so, too, M. Geoffrey Saint-Hilaire, Anomalies de l'Organisation, Vol. III, p. 380, says that when we were quite ignorant of the cause of monstrous births, the phenomenon was ascribed to the Deity, — "de là aussi l'intervention supposée de la divinité"; and for an exact verification of this, compare Burdach, Traité de Physiologie, Vol. II, p. 247, with *Journal of Geographical Society*, Vol. XVI, p. 113); Ellis' History of Madagascar, Vol. I, pp. 224, 225; Prichard's Physical History, Vol. I, p. 207; Vol. V, p. 492; *Journal of Asiatic Society*, Vol. III, p. 230; Vol. IV, p. 158; Asiatic Researches, Vol. III, pp. 29, 156; Vol. IV, pp. 56, 58, 74; Vol. XVI, pp. 215, 280; Neander's History of the Church, Vol. III, p. 119; Crawford's History of the Indian Archipelago, Vol. I, p. 328; Low's Sarawak, pp. 174, 261; Cook's Voyages, Vol. I, p. 229; Mariner's Tonga Islands, Vol. I, pp. 194, 350–360, 374, 438; Vol. II, pp. 172, 230; Huc's Travels in Tartary and Thibet, Vol. I, pp. 74–77; Richardson's Travels in the Sahara, Vol. I, p. 27; M'Culloh's Researches, p. 105; *Journal of Geographical Society*, Vol. I, p. 41; Vol. IV, p. 260; Vol. XIV, p. 37. And in regard to Europe, compare Spence's Origin of the Laws of Europe, p. 322; Turner's History of England, Vol. III, p. 443; Phillips on Scrofula, p. 255; Otter's Life of Clarke, Vol. I, pp. 265, 266, which may be illustrated by the "sacred" disease of Cambyses, no doubt epilepsy (see Herodotus Lib. III, chap. xxxiv, Vol. II, p. 63).

exercised over the human mind. For those parts of Asia where the highest refinement was reached are, from various physical causes, much more unhealthy than the most civilized parts of Europe.[1] This fact alone must have produced a considerable effect on the national character,[2] and the more so as it was aided by those other circumstances which I have pointed out, all tending in the same direction. To this may be added, that the great plagues by which Europe has at different periods been scourged have for the most part proceeded from the East, which is their natural birthplace, and where they are most fatal. Indeed, of those cruel diseases now existing in Europe scarcely one is indigenous; and the worst of them were imported from tropical countries in and after the first century of the Christian era.[3]

Summing up these facts, it may be stated that in the civilizations exterior to Europe all nature conspired to increase the authority of the imaginative faculties and weaken the authority of the reasoning ones. With the materials now existing, it would be possible to follow this vast law to its remotest consequences, and show how in Europe it is opposed by another law diametrically opposite, and by virtue of which the tendency of natural phenomena is, on the whole, to limit the imagination and embolden the understanding, thus inspiring man with confidence in

[1] Heat, moisture, and consequent rapid decomposition of vegetable matter are certainly among the causes of this; and to them may perhaps be added the electrical state of the atmosphere in the tropics. Compare Holland's Medical Notes, p. 477; M'William's Medical Expedition to the Niger, pp. 157, 185; Simon's Pathology, p. 269; Forry's Climate and its Endemic Influences, p. 158. M. Lepelletier says, rather vaguely (Physiologie Médicale, Vol. IV, p. 527), that the temperate zones are "favorables à l'exercice complet et régulier des phénomènes vitaux."

[2] And must have strengthened the power of the clergy; for, as Charlevoix says with great frankness, "pestilences are the harvests of the ministers of God" (Southey's History of Brazil, Vol. II, p. 254).

[3] For evidence of the extra-European origin of European diseases, some of which, such as the smallpox, have passed from epidemics into endemics, compare Encyclopedia of the Medical Sciences, 4to, 1847, p. 728; *Transactions of Asiatic Society*, Vol. II, pp. 54, 55; Michaelis on the Laws of Moses, Vol. III, p. 313; Sprengel, Histoire de la Médecine, Vol. II, pp. 33, 195; Wallace's Dissertation on the Numbers of Mankind, pp. 81, 82; Huetiana, Amsterdam, 1723, pp. 132–135; Sanders on the Smallpox, pp. 3–4, Edinburgh, 1813; Wilks' History of the South of India, Vol. III, pp. 16–21; Clot-Bey, De la Peste, p. 227, Paris, 1840.

his own resources, and facilitating the increase of his knowledge by encouraging that bold, inquisitive, and scientific spirit which is constantly advancing, and on which all future progress must depend.

It is not to be supposed that I can trace in detail the way in which, owing to these peculiarities, the civilization of Europe has diverged from all others that preceded it. To do this would require a learning and a reach of thought to which hardly any single man ought to pretend, since it is one thing to have a perception of a large and general truth, and it is another thing to follow out that truth in all its ramifications, and prove it by such evidence as will satisfy ordinary readers. Those, indeed, who are accustomed to speculations of this character, and are able to discern in the history of man something more than a mere relation of events, will at once understand that in these complicated subjects the wider any generalization is, the greater will be the chance of apparent exceptions; and that when the theory covers a very large space the exceptions may be innumerable and yet the theory remain perfectly accurate. The two fundamental propositions which I hope to have demonstrated are: first, that there are certain natural phenomena which act on the human mind by exciting the imagination; and second, that those phenomena are much more numerous out of Europe than in it. If these two propositions are admitted, it inevitably follows that in those countries where the imagination has received the stimulus some specific effects must have been produced, unless, indeed, the effects have been neutralized by other causes. Whether or not there have been antagonistic causes is immaterial to the truth of the theory, which is based on the two propositions just stated. In a scientific point of view, therefore, the generalization is complete; and it would perhaps be prudent to leave it as it now stands rather than attempt to confirm it by further illustrations, since all particular facts are liable to be erroneously stated, and are sure to be contradicted by those who dislike the conclusions they corroborate. But in order to familiarize the reader with the principles I have put forward, it does seem advisable that a few instances should be given of their actual working; and I will therefore briefly notice the effects they have produced

in the three great divisions of Literature, Religion, and Art. In each of these departments I will endeavor to indicate how the leading features have been affected by the Aspects of Nature; and with a view of simplifying the inquiry, I will take the two most conspicuous instances on each side, and compare the manifestations of the intellect of Greece with those of the intellect of India, — these being the two countries respecting which the materials are most ample, and in which the physical contrasts are most striking.

If, then, we look at the ancient literature of India, even during its best period, we shall find the most remarkable evidence of the uncontrolled ascendency of the imagination. In the first place, we have the striking fact that scarcely any attention has been paid to prose composition, all the best writers having devoted themselves to poetry, as being most congenial to the national habits of thought. Their works on grammar, on law, on history, on medicine, on mathematics, on geography, and on metaphysics are nearly all poems, and are put together according to a regular system of versification.[1] The consequence is, that while prose

[1] "So verwandelt das geistige Leben des Hindu sich in wahre Poesie, und das bezeichnende Merkmal seiner ganzen Bildung ist: Herrschaft der Einbildungskraft über den Verstand; im geraden Gegensatz mit der Bildung des Europäers, deren allgemeiner Charakter in der Herrschaft des Verstandes über die Einbildungskraft besteht. Es wird dadurch begreiflich, dass die Literatur der Hindus nur eine poetische ist; dass sie überreich an Dichterwerken, aber arm am wissenschaftlichen Schriften sind; dass ihre heiligen Schriften, ihre Gesetze und Sagen poetisch, und grösstentheils in Versen geschrieben sind; ja dass Lehrbücher der Grammatik, der Heilkunde, der Mathematik und Erdbeschreibung in Versen verfasst sind" (Rhode, Religiöse Bildung der Hindus, Vol. II, p. 626). Thus, too, we are told, respecting one of their most celebrated metaphysical systems, that "the best text of the Sanchya is a short treatise in verse" (Colebrooke on the Philosophy of the Hindus, in *Transactions of Asiatic Society*, Vol. I, p. 23). And in another place the same high authority says (Asiatic Researches, Vol. X, p. 439), "The metrical treatises on law and other sciences are almost entirely composed in this easy verse." M. Klaproth, in an analysis of a Sanskrit history of Cashmere, says, "Comme presque toutes les compositions hindoues, il est écrit en vers" (*Journal Asiatique*, I. série, Vol. VII, p. 8, Paris, 1825). See also, in Vol. VI, pp. 175, 176, the remarks of M. Burnouf, "Les philosophes indiens, comme s'ils ne pouvaient échapper aux influences poétiques de leur climat, traitent les questions de la métaphysique le plus abstraite par similitudes et métaphores." Compare Vol. VI, p. 4, "le génie indien si poétique et si religieux"; and see Cousin, Histoire de la Philosophie, II. série, Vol. I, p. 27.

writing is utterly despised, the art of poetry has been cultivated so assiduously that the Sanskrit can boast of meters more numerous and more complicated than have ever been possessed by any of the European languages.[1]

This peculiarity in the form of Indian literature is accompanied by a corresponding peculiarity in its spirit. For it is no exaggeration to say, that in that literature everything is calculated to set the reason of man at open defiance. An imagination, luxuriant even to disease, runs riot on every occasion. This is particularly seen in those productions which are most eminently national, such as the Ramayana, the Mahabharata, and the Puranas in general. But we also find it even in their geographical and chronological systems, which of all others might be supposed least liable to imaginative flights. A few examples of the statements put forward in the most authoritative books will supply the means of instituting a comparison with the totally opposite condition of the European intellect, and will give the reader some idea of the extent to which credulity can proceed, even among a civilized people.[2]

Of all the various ways in which the imagination has distorted truth, there is none that has worked so much harm as an exaggerated respect for past ages. This reverence for antiquity is repugnant to every maxim of reason, and is merely the indulgence of a poetic sentiment in favor of the remote and unknown. It is therefore natural that, in periods when the intellect was, comparatively speaking, inert, this sentiment should have been far

[1] Mr. Yates says of the Hindus, that no other people have ever "presented an equal variety of poetic compositions. The various meters of Greece and Rome have filled Europe with astonishment; but what are these, compared with the extensive range of Sanskrit meters under its three classes of poetical writing?" (Yates on Sanskrit Alliteration, in Asiatic Researches, Vol. XX, p. 159, Calcutta, 1836). See also on the Sanskrit meters, p. 321, and an Essay by Colebrooke, Vol. X, pp. 389–474. On the metrical system of the Vedas, see Mr. Wilson's note in the Rig Veda Sanhita, Vol. II, p. 135.

[2] In Europe, as we shall see in the sixth chapter of this volume, the credulity was at one time extraordinary; but the age was then barbarous, and barbarism is always credulous. On the other hand, the examples gathered from Indian literature will be taken from the works of a lettered people, written in a language extremely rich, and so highly polished that some competent judges have declared it equal, if not superior, to the Greek.

stronger than it now is; and there can be little doubt that it will continue to grow weaker, and that in the same proportion the feeling of progress will gain ground, so that veneration for the past will be succeeded by hope for the future. But formerly the veneration was supreme, and innumerable traces of it may be found in the literature and popular creed of every country. It is this, for instance, which inspired the poets with their notion of a golden age, in which the world was filled with peace, in which evil passions were stilled, and crimes were unknown. It is this, again, which gave to theologians their idea of the primitive virtue and simplicity of man, and of his subsequent fall from that high estate. And it is this same principle which diffused a belief that in the olden times men were not only more virtuous and happy but also physically superior in the structure of their bodies; and that by this means they attained to a larger stature and lived to a greater age than is possible for us, their feeble and degenerate descendants.

Opinions of this kind being adopted by the imagination in spite of the understanding, it follows that the strength of such opinions becomes, in any country, one of the standards by which we may estimate the predominance of the imaginative faculties. Applying this test to the literature of India, we shall find a striking confirmation of the conclusions already drawn. The marvelous feats of antiquity with which the Sanskrit books abound are so long and so complicated that it would occupy too much space to give even an outline of them, but there is one class of these singular fictions which is well worth attention and admits of being briefly stated. I allude to the extraordinary age which man was supposed to have attained in former times. A belief in the longevity of the human race at an early period of the world was the natural product of those feelings which ascribed to the ancients an universal superiority over the moderns; and this we see exemplified in some of the Christian, and in many of the Hebrew, writings. But the statements in these works are tame and insignificant when compared with what is preserved in the literature of India. On this, as on every subject, the imagination of the Hindus distanced all competition. Thus, among an

immense number of similar facts we find it recorded that in ancient times the duration of the life of common men was eighty thousand years,[1] and that holy men lived to be upwards of one hundred thousand.[2] Some died a little sooner, others a little later; but in the most flourishing period of antiquity, if we take all classes together, one hundred thousand years was the average.[3] Of one king, whose name was Yudhishthir, it is casually mentioned that he reigned twenty-seven thousand years;[4] while another, called Alarka, reigned sixty-six thousand.[5] They were cut off in their prime, since there are several instances of the early poets living to be about half a million.[6] But the most remarkable case is that of a very shining character in Indian history, who united in his single person the functions of a king and a saint. This eminent man lived in a pure and virtuous age, and his days were indeed long in the land, since when he was made king he was two million years old; he then reigned six million three hundred thousand years; having done which, he resigned his empire, and lingered on for one hundred thousand years more.[7]

[1] "The limit of life was 80,000 years" (Asiatic Researches, Vol. XVI, p. 456, Calcutta, 1828). This was likewise the estimate of the Tibetan divines, according to whom men formerly "parvenaient à l'âge de 80,000 ans" (*Journal Asiatique*, I. série, Vol. III, p. 199, Paris, 1823).

[2] "Den Hindu macht dieser Widerspruch nicht verlegen, da er seine Heiligen 100,000 Jahre und länger leben lässt" (Rhode, Religiöse Bildung der Hindus, Vol. I, p. 175).

[3] In the Dabistan, Vol. II, p. 47, it is stated of the earliest inhabitants of the world that "the duration of human life in this age extended to one hundred thousand common years."

[4] Wilford (Asiatic Researches, Vol. V, p. 242) says, "When the Puranas speak of the kings of ancient times, they are equally extravagant. According to them, King Yudhishthir reigned seven-and-twenty thousand years."

[5] "For sixty thousand and sixty hundred years no other youthful monarch except Alarka reigned over the earth" (Vishnu Purana, p. 408).

[6] And sometimes more. In the Essay on Indian Chronology in Works of Sir W. Jones, Vol. I, p. 325, we hear of "a conversation between Valmic and Vyasa, . . . two bards whose ages were separated by a period of 864,000 years." This passage is also in Asiatic Researches, Vol. II, p. 399.

[7] "He was the first king, first anchoret, and first saint, and is therefore entitled Prathama-Raja, Prathama Bhicshacara, Prathama Jina, and Prathama Tirthancara. At the time of his inauguration as king his age was two million years. He reigned six million three hundred thousand years, and then resigned his empire to his sons: and having employed one hundred thousand years in passing through the several

The same boundless reverence for antiquity made the Hindus refer everything important to the most distant periods, and they frequently assign a date which is absolutely bewildering.[1] Their great collection of laws, called the Institutes of Manu, is certainly less than three thousand years old; but the Indian chronologists, so far from being satisfied with this, ascribe to them an age that the sober European mind finds a difficulty even in conceiving. According to the best native authorities, these Institutes were revealed to man about two thousand million years before the present era.[2]

All this is but a part of that love of the remote, that straining after the infinite, and that indifference to the present, which characterizes every branch of the Indian intellect. Not only in literature, but also in religion and in art, this tendency is supreme. To subjugate the understanding and exalt the imagination is the universal principle. In the dogmas of their theology, in the character of their gods, and even in the forms of their temples we see how the sublime and threatening aspects of the external world have filled the mind of the people with those images of the grand and the terrible which they strive to reproduce in a visible form and to which they owe the leading peculiarities of their national culture.

Our view of this vast process may be made clearer by comparing it with the opposite condition of Greece. In Greece we see a country altogether the reverse of India. The works of nature, which in India are of startling magnitude, are in Greece far smaller, feebler, and in every way less threatening to man. In the great center of Asiatic civilization the energies of the human race are confined and, as it were, intimidated by the surrounding phenomena. Besides the dangers incidental to tropical climates, there

stages of austerity and sanctity, departed from this world on the summit of a mountain named Ashtapada" (Asiatic Researches, Vol. IX, p. 305).

[1] "Speculationen über Zahlen sind dem Inder so geläufig, dass selbst die Sprache einen Ausdruck hat für eine Unität mit 63 Nullen, nämlich Asanke, eben weil die Berechnung der Weltperioden diese enorme Grössen nothwendig machte, denn jene einfachen 12,000 Jahre schienen einem Volke, welches so gerne die höchstmögliche Potenz auf seine Gottheit übertragen mögte, viel zu geringe zu seyn" (Bohlen, Das alte Indien, Vol. II, p. 298).

[2] Elphinstone's History of India, p. 136, "a period exceeding 4,320,000 multiplied by six times seventy-one."

are those noble mountains which seem to touch the sky, and from whose sides are discharged mighty rivers which no art can divert from their course and which no bridge has ever been able to span. There, too, are impassable forests, whole countries lined with interminable jungle, and beyond them, again, dreary and boundless deserts, — all teaching man his own feebleness and his inability to cope with natural forces. Without, and on either side, there are great seas, ravaged by tempests far more destructive than any known in Europe, and of such sudden violence that it is impossible to guard against their effects. And as if in those regions everything combined to cramp the activity of man, the whole line of coast, from the mouth of the Ganges to the extreme south of the peninsula, does not contain a single safe and capacious harbor, not one port that affords a refuge, which is perhaps more necessary there than in any other part of the world.[1]

But in Greece the Aspects of Nature are so entirely different that the very conditions of existence are changed. Greece, like India, forms a peninsula; but while in the Asiatic country everything is great and terrible, in the European country everything is small and feeble. The whole of Greece occupies a space somewhat less than the kingdom of Portugal,[2] that is, about a fortieth part of what is now called Hindustan.[3] Situated in the most accessible part of a narrow sea, it had easy contact on the east with Asia Minor, on the west with Italy, on the south with Egypt. Dangers of all kinds were far less numerous than in the tropical

[1] Symes (Embassy to Ava, Vol. III, p. 278) says, "From the mouth of the Ganges to Cape Comorin, the whole range of our continental territory, there is not a single harbor capable of affording shelter to a vessel of 500 tons burden." Indeed, according to Percival, there is, with the exception of Bombay, no harbor, "either on the Coromandel or Malabar coasts, in which ships can moor in safety at all seasons of the year" (Percival's Account of Ceylon, pp. 2, 15, 66).

[2] "Altogether its area is somewhat less than that of Portugal." See Grote's History of Greece, Vol. II, p. 302; and the same remark in Thirlwall's History of Greece, Vol. I, p. 2, and in Heeren's Ancient Greece, 1845, p. 16. M. Heeren says, "But even if we add all the islands, its square contents are a third less than those of Portugal."

[3] The area of Hindustan being, according to Mr. M'Culloch (Geographical Dictionary, 1849, Vol. I, p. 993), "between one million two hundred thousand and one million three hundred thousand square miles."

civilizations. The climate was more healthy ;[1] earthquakes were less frequent ; hurricanes were less disastrous ; wild beasts and noxious animals, less abundant. In regard to the other great features the same law prevails. The highest mountains in Greece are less than one third of the Himalaya, so that nowhere do they reach the limit of perpetual snow.[2] As to rivers, not only is there nothing approaching those imposing volumes which are poured down from the mountains of Asia, but nature is so singularly sluggish that neither in northern nor in southern Greece do we find anything beyond a few streams which are easily forded, and which, indeed, in the summer season, are frequently dried up.[3]

These striking differences in the material phenomena of the two countries gave rise to corresponding differences in their mental associations. For as all ideas must arise partly from what are called spontaneous operations in the mind, and partly from what is suggested to the mind by the external world, it was natural that so great an alteration in one of the causes should produce an alteration in the effects. The tendency of the surrounding phenomena was, in India, to inspire fear; in Greece, to give confidence. In India man was intimidated; in Greece he was encouraged. In India obstacles of every sort were so numerous, so alarming, and apparently so inexplicable that the difficulties of life could only be solved by constantly appealing to

[1] In the best days of Greece those alarming epidemics by which the country was subsequently ravaged were comparatively little known. See Thirlwall's History of Greece, Vol. III, p. 134; Vol. VIII, p. 471. This may be owing to large cosmical causes, or to the simple fact that the different forms of pestilence had not yet been imported from the East by actual contact. On the vague accounts we possess of the earlier plagues, see Clot-Bey, De la Peste, pp. 21, 46, 184, Paris, 1840. The relation even of Thucydides is more satisfactory to scholars than to pathologists.

[2] "Mount Guiona, the highest point in Greece, and near its northern boundary, is 8239 feet high. . . . No mountain in Greece reaches the limit of perpetual snow" (M'Culloch's Geographical Dictionary, 1849, Vol. I, p. 924). Compare the table of mountains in Baker's Memoir on North Greece, in *Journal of Geographical Society*, Vol. VII, p. 94, with Bakewell's Geology, pp. 621, 622.

[3] "Greece has no navigable river" (M'Culloch's Geographical Dictionary, Vol. I, p. 924). "Most of the rivers of Greece are torrents in early spring, and dry before the end of the summer" (Grote's History of Greece, Vol. II, p. 286).

the direct agency of supernatural causes. Those causes being beyond the province of the understanding, the resources of the imagination were incessantly occupied in studying them; the imagination itself was overworked, its activity became dangerous, it encroached on the understanding, and the equilibrium of the whole was destroyed. In Greece opposite circumstances were followed by opposite results. In Greece nature was less dangerous, less intrusive, and less mysterious than in India. In Greece, therefore, the human mind was less appalled, and less superstitious; natural causes began to be studied; physical science first became possible; and man, gradually waking to a sense of his own power, sought to investigate events with a boldness not to be expected in those other countries where the pressure of nature troubled his independence and suggested ideas with which knowledge is incompatible.

The effect of these habits of thought on the national religion must be very obvious to whoever has compared the popular creed of India with that of Greece. The mythology of India, like that of every tropical country, is based upon terror, and upon terror, too, of the most extravagant kind. Evidence of the universality of this feeling abounds in the sacred books of the Hindus, in their traditions, and even in the very form and appearance of their gods. And so deeply is all this impressed on the mind that the most popular deities are invariably those with whom images of fear are most intimately associated. Thus, for example, the worship of Siva is more general than any other; and as to its antiquity, there is reason to believe that it was borrowed by the Brahmins from the original Indians.[1] At all events, it is very

[1] See Stevenson on the Ante-Brahmanical Religion of the Hindus, in *Journal of Asiatic Society*, Vol. VIII, pp. 331, 332, 336, 338. Mr. Wilson (*Journal*, Vol. III, p. 204) says, "The prevailing form of the Hindu religion in the south of the peninsula was, at the commencement of the Christian era, and some time before it most probably, that of Siva." See also Vol. V, p. 85, where it is stated that Siva "is the only Hindu god to whom honor is done at Ellora." Compare *Transactions of Society of Bombay*, Vol. III, p. 521; Heeren's Asiatic Nations, 1846, Vol. II, pp. 62, 66. On the philosophical relation between the followers of Siva and those of Vishnu, see Ritter's History of Ancient Philosophy, Vol. IV, pp. 334, 335; and the noticeable fact (Buchanan's Mysore, Vol. II, p. 410), that even the Naimar caste, whose "proper deity" is Vishnu, "wear on their foreheads

ancient and very popular; and Siva himself forms, with Brahma and Vishnu, the celebrated Hindu Triad. We need not, therefore, be surprised that with this god are connected images of terror, such as nothing but a tropical imagination could conceive. Siva is represented to the Indian mind as a hideous being, encircled by a girdle of snakes, with a human skull in his hand, and wearing a necklace composed of human bones. He has three eyes; the ferocity of his temper is marked by his being clothed in a tiger's skin; he is represented as wandering about like a madman, and over his left shoulder the deadly cobra de capello rears its head. This monstrous creation of an awe-struck fancy has a wife Doorga, called sometimes Kali and sometimes by other names.[1] She has a body of dark blue; while the palms of her hands are red, to indicate her insatiate appetite for blood. She has four arms, with one of which she carries the skull of a giant; her tongue protrudes, and hangs lollingly from her mouth; round her waist are the hands of her victims; and her neck is adorned with human heads strung together in a ghastly row.[2]

If we now turn to Greece we find, even in the infancy of its religion, not the faintest trace of anything approaching to this. For in Greece, the causes of fear being less abundant, the expression of terror was less common. The Greeks, therefore, were by no means disposed to incorporate into their religion those feelings of dread natural to the Hindus. The tendency of Asiatic civilization was to widen the distance between men and their deities; the tendency of Greek civilization was to diminish it. Thus it is that in Hindustan all the gods had something

the mark of Siva." As to the worship of Siva in the time of Alexander the Great, see Thirlwall's History of Greece, Vol. II, p. 36; and for further evidence of its extent, Bohlen, Das alte Indien, Vol. I, pp. 29, 147, 206, and *Transactions of Asiatic Society*, Vol. II, pp. 50, 294.

[1] So it is generally stated by the Hindu theologians; but according to Rammohun Roy, Siva had two wives. See Rammohun Roy on the Veds, p. 90.

[2] On these attributes and representations of Siva and Doorga, see Rhode, Religiöse Bildung der Hindus, Vol. II, p. 241; Coleman's Mythology of the Hindus, pp. 63, 92; Bohlen, Das alte Indien, Vol. I, p. 207; Ward's Religion of the Hindoos, Vol. I, pp. xxxvii, 27, 145; *Transactions of Society of Bombay*, Vol. I, pp. 215, 221. Compare the curious account of an image supposed to represent Mahadeo, in *Journal Asiatique*, I. série, Vol. I, p. 354, Paris, 1822.

monstrous about them: as Vishnu with four hands, Brahma with five heads, and the like.[1] But the gods of Greece were always represented in forms entirely human.[2] In that country no artist would have gained attention if he had presumed to portray them in any other shape. He might make them stronger than men, he might make them more beautiful; but still they must be men. The analogy between God and man, which excited the religious feelings of the Greeks, would have been fatal to those of the Hindus.

This difference between the artistic expressions of the two religions was accompanied by an exactly similar difference between their theological traditions. In the Indian books the imagination is exhausted in relating the feats of the gods; and the more obviously impossible any achievement is, the greater the pleasure with which it was ascribed to them. But the Greek gods had not only human forms but also human attributes, human pursuits, and human tastes.[3] The men of Asia, to whom every object of

[1] Ward on the Religion of the Hindoos, Vol. I, p. 35; *Transactions of Society of Bombay*, Vol. I, p. 223. Compare the gloss in the Dabistan, Vol. II, p. 202.

[2] "The Greek gods were formed like men, with greatly increased powers and faculties, and acted as men would do if so circumstanced, but with a dignity and energy suited to their nearer approach to perfection. The Hindu gods, on the other hand, though endued with human passions, have always something monstrous in their appearance, and wild and capricious in their conduct. They are of various colors, red, yellow, and blue; some have twelve heads, and some have four hands. They are often enraged without a cause, and reconciled without a motive" (Elphinstone's History of India, pp. 96, 97). See also Erskine on the Temple of Elephanta, in *Transactions of Society of Bombay*, Vol. I, p. 246; and the Dabistan, Vol. I, p. cxi.

[3] "In the material polytheism of other leading ancient nations the Egyptians, for example, the incarnation of the Deity was chiefly, or exclusively, confined to animals, monsters, or other fanciful emblems. . . . In Greece, on the other hand, it was an almost necessary result of the spirit and grace with which the deities were embodied in human forms, that they should also be burdened with human interests and passions. Heaven, like earth, had its courts and palaces, its trades and professions, its marriages, intrigues, divorces" (Mure's History of the Literature of Ancient Greece, Vol. I, pp. 471, 472). So, too, Tennemann (Geschichte der Philosophie, Vol. III, p. 419): "Diese Götter haben Menschengestalt. . . . Haben die Götter aber nicht nur menschliche Gestalt, sondern auch einen menschlichen Körper, so sind sie als Menschen auch denselben Unvollkommenheiten, Krankheiten und dem Tode unterworfen; dieses streitet mit dem Begriffe," *i.e.* of Epicurus. Compare Grote's History of Greece, Vol. I, p. 596: "The mythical

nature was a source of awe, acquired such habits of reverence that they never dared to assimilate their own actions with the actions of their deities. The men of Europe, encouraged by the safety and inertness of the material world, did not fear to strike a parallel, from which they would have shrunk had they lived amid the dangers of a tropical country. It is thus that the Greek divinities are so different from those of the Hindus that in comparing them we seem to pass from one creation into another. The Greeks generalized their observations upon the human mind, and then applied them to the gods.[1] The coldness of women was figured in Diana; their beauty and sensuality in Venus; their pride in Juno; their accomplishments in Minerva. To the ordinary avocations of the gods the same principle was applied. Neptune was a sailor; Vulcan was a smith; Apollo was sometimes a fiddler, sometimes a poet, sometimes a keeper of oxen. As to Cupid, he was a wanton boy, who played with his bow and arrows; Jupiter was an amorous and good-natured king; while Mercury was indifferently represented either as a trustworthy messenger or else as a common and notorious thief.

Precisely the same tendency to approximate human forces towards superhuman ones is displayed in another peculiarity of the Greek religion. I mean, that in Greece we for the first time meet with hero worship, that is, the deification of mortals. According to the principles already laid down, this could not be expected in a tropical civilization, where the Aspects of Nature filled man with a constant sense of his own incapacity. It is therefore natural that it should form no part of the ancient Indian religion;[2] neither was it known to the Egyptians,[3] nor to the

age was peopled with a mingled aggregate of gods, heroes, and men, so confounded together that it was often impossible to distinguish to which class any individual name belonged." See also the complaint of Xenophanes, in Müller's History of Literature of Greece, p. 251, London, 1856.

[1] The same remark applies to beauty of form, which they first aimed at in the statues of men, and then brought to bear upon the statues of the gods. This is well put in Mr. Grote's important work, History of Greece, 1847, Vol. IV, pp. 133, 134.

[2] "But the worship of deified heroes is no part of that system" (Colebrooke on the Vedas, in *Asiatic Researches*, Vol. VIII, p. 495).

[3] Mackay's Religious Development, Vol. II, p. 53, London, 1850. Compare Wilkinson's Ancient Egyptians, Vol. IV, pp. 148, 318, and Matter, Histoire de

Persians,[1] nor, so far as I am aware, to the Arabians.[2] But in Greece man being less humbled, and as it were less eclipsed, by the external world, thought more of his own powers, and human nature did not fall into that discredit in which it elsewhere sank. The consequence was, that the deification of mortals was a recognized part of the national religion at a very early period in the history of Greece;[3] and this has been found so natural to Europeans that the same custom was afterwards renewed with eminent success by the Romish Church. Other circumstances of a very different character are gradually eradicating this form of idolatry; but its existence is worth observing as one of the innumerable illustrations of the way in which European civilization has diverged from all those that preceded it.[4]

It is thus that in Greece everything tended to exalt the dignity of man, while in India everything tended to depress it.[5] To sum

l'École d'Alexandrie, Vol. I, p. 2; the "culte des grands hommes," which afterwards arose in Alexandria (Matter, Vol. I, p. 54) must have been owing to Greek influence.

[1] There are no indications of it in the Zendavesta; and Herodotus says that the Persians were unlike the Greeks, in so far as they disbelieved in a god having a human form (Book I, chap. cxxxi, Vol. I, p. 308: *οὐκ ἀνθρωποφυέας ἐνόμισαν τοὺς θεούς, κατάπερ οἱ Ἕλληνες, εἶναι*).

[2] I am not acquainted with any evidence connecting this worship with the old Arabian religion, and it was certainly most alien to the spirit of Mohammedanism.

[3] Mure's History of the Literature of Greece, Vol. I, pp. 28, 500; Vol. II, p. 402: very good remarks on a subject handled unsatisfactorily by Coleridge (Literary Remains, Vol. I, p. 185). Thirlwall (History of Greece, Vol. I, p. 207) admits that "the views and feelings out of which it (the worship of heroes) arose seem to be clearly discernible in the Homeric poems." Compare Cudworth's Intellectual System, Vol. II, pp. 226, 372. In the Cratylus, chap. xxxiii, Socrates is represented as asking, *Οὐκ οἶσθα ὅτι ἡμίθεοι οἱ ἥρωες* (Platonis Opera, Vol. IV, p. 227, edit. Bekker, London, 1826). And in the next century Alexander obtained for his friend Hephæstion the right of being "worshiped as a hero" (Grote's History of Greece, Vol. XII, p. 339).

[4] The adoration of the dead, and particularly the adoration of martyrs, was one great point of opposition between the orthodox church and the Manicheans (Beausobre, Histoire Critique de Manichée, Vol. I, p. 316; Vol. II, pp. 651, 669); and it is easy to understand how abhorrent such a practice must have been to the Persian heretics.

[5] M. Cousin, in his eloquent and ingenious work (Histoire de la Philosophie, III. série, Vol. I, pp. 183–187), has some judicious observations on what he calls "l'époque de l'infini" of the East, contrasted with that "du fini," which began in Europe. But as to the physical causes of this, he only admits the grandeur of

up the whole, it may be said that the Greeks had more respect for human powers, the Hindus for superhuman. The first dealt more with the known and available; the other with the unknown and mysterious.[1] And by a parity of reasoning, the imagination, which the Hindus, being oppressed by the pomp and majesty of nature, never sought to control, lost its supremacy in the little peninsula of ancient Greece. In Greece, for the first time in the history of the world, the imagination was in some degree tempered and confined by the understanding. Not that its strength was impaired, or its vitality diminished. It was broken in and tamed; its exuberance was checked, its follies were chastised. But that its energy remained, we have ample proof in those productions of the Greek mind which have survived to our own time. The gain, therefore, was complete, since the inquiring and skeptical faculties of the human understanding were cultivated, without destroying the reverential and poetic instincts of the imagination. Whether or not the balance was accurately adjusted is another question; but it is certain that the adjustment was more nearly arrived at in Greece than in any previous civilization.[2] There can, I think, be little doubt that, notwithstanding what

nature, overlooking those natural elements of mystery and of danger by which religious sentiments were constantly excited.

[1] A learned Orientalist says that no people have made such efforts as the Hindus "to solve, exhaust, comprehend, what is insolvable, inexhaustible, incomprehensible" (Troyer's Preliminary Discourse on the Dabistan, Vol. I, p. cviii).

[2] This is noticed by Tennemann, who, however, has not attempted to ascertain the cause: "Die Einbildungskraft des Griechen war schöpferisch, sie schuf in seinen Innern neue Ideenwelten; aber er wurde doch nie verleitet, die idealische Welt mit der wirklichen zu verwechseln, weil sie immer mit einem richtigen Verstande und gesunder Beurtheilungskraft verbunden war" (Geschichte der Philosophie, Vol. I, p. 8); and in Vol. VI, p. 490, he says: "Bei allen diesen Mängeln und Fehlern sind doch die Griechen die einzige Nation der alten Welt, welche Sinn für Wissenschaft hatte, und zu diesem Behufe forschte. Sie haben doch die Bahn gebrochen, und den Weg zur Wissenschaft geebnet." To the same effect, see Sprengel, Histoire de la Médecine, Vol. I, p. 215. And on this distance between the Eastern and the European mind, see Matter, Histoire du Gnosticisme, Vol. I, pp. 18, 233, 234. So, too, Kant (Logik, in Kant's Werke, Vol. I, p. 350): "Unter allen Völkern haben also die Griechen erst angefangen zu philosophiren. Denn sie haben zuerst versucht, nicht an dem Leitfaden der Bilder die Vernunfterkenntnisse zu cultiviren, sondern *in abstracto;* statt dass die anderen Völker sich die Begriffe immer nur durch Bilder *in concreto* verständlich zu machen suchten."

was effected, too much authority was left to the imaginative faculties, and that the purely reasoning ones did not receive, and never have received, sufficient attention. Still, this does not affect the great fact that the Greek literature is the first in which this deficiency was somewhat remedied, and in which there was a deliberate and systematic attempt to test all opinions by their consonance with human reason, and thus vindicate the right of man to judge for himself on matters which are of supreme and incalculable importance.

I have selected India and Greece as the two terms of the preceding comparison, because our information respecting those countries is most extensive, and has been most carefully arranged. But everything we know of the other tropical civilizations confirms the views I have advocated respecting the effects produced by the Aspects of Nature. In Central America extensive excavations have been made, and what has been brought to light proves that the national religion was, like that of India, a system of complete and unmitigated terror.[1] Neither there nor in Mexico, nor in Peru, nor in Egypt, did the people desire to represent their deities in human forms, or ascribe to them human attributes. Even their temples are huge buildings, often constructed with great skill, but showing an evident wish to impress the mind with fear, and offering a striking contrast to the lighter and smaller structures which the Greeks employed for religious purposes. Thus, even in the style of architecture do we see the same principle at work; the dangers of the tropical civilization being more suggestive of the infinite, while the safety of the European civilization was more suggestive of the finite. To follow out the consequences of this great antagonism, it would be necessary to indicate how the infinite, the imaginative, the synthetic, and the deductive are all connected; and are opposed, on the other hand, by the finite, the skeptical, the analytic, and the

[1] Thus, of one of the idols at Copan, "The intention of the sculptor seems to have been to excite terror" (Stephens' Central America, Vol. I, p. 152); at p. 159, "The form of sculpture most generally used was a death's head." At Mayapan (Vol. III, p. 133), "representations of human figures, or animals with hideous features and expressions, in producing which the skill of the artist seems to have been expended"; and again, p. 412, "unnatural and grotesque faces."

inductive. A complete illustration of this would carry me beyond the plan of this Introduction, and would perhaps exceed the resources of my own knowledge; and I must now leave to the candor of the reader what I am conscious is but an imperfect sketch, but what may, nevertheless, suggest to him materials for future thought, and, if I might indulge the hope, may open to historians a new field, by reminding them that everywhere the hand of nature is upon us, and that the history of the human mind can only be understood by connecting with it the history and the aspects of the material universe.

[This remarkable chapter from Buckle is presented, as nearly as possible, as it was originally published. It is by far the strongest presentation ever made of the materialistic conception of history. The difference between Buckle's method and that of Karl Marx, e.g., is essentially the difference between the positive and the metaphysical methods so admirably set forth by Auguste Comte (see pages 15 to 64 of this book). Buckle's vast learning and irresistible logic make this work, and especially this chapter, a monument to his genius which time is not likely to mar. Certainly, in this age, ignorance of Buckle argues an incomplete education as truly as does an ignorance of Adam Smith or of Darwin. — ED.]

XI

THE ZONE OF THE FOUNDERS OF RELIGION[1]

It would appear from this that there is no apparent connection between the greater precariousness of life at any given place of abode, or between the national food, and the local religious creations. But we may, perhaps, find something serviceable where we should least expect it, among the old Arabian geographers. Although they were disciples of the Alexandrian Greeks, and familiar with the Ptolemaic division into degrees, in their popular expositions of their science they nevertheless distributed the earth into climates, or, as we are wont to express it, into climatic zones. These zones were not always of the same breadth, but were about seven degrees, more or less. Each zone was supposed to possess certain products, animal, vegetable, and mineral, in special perfection; even towards the close of the Middle Ages our schoolmen believed that black men were to be found only on or close to the equator, and that gold and precious stones never occur beyond the limits of the second zone. In the language of this systematic error, Shemseddin, who was named Demeshqi, after his native city of Damascus, stated that people of light color and high intellectual endowments are limited to the third and fourth climates, or between 19° and 33° 49′ north latitude, and that in these zones were born all the great founders of religion, philosophers, and scholars, himself included. This zone begins a little to the south of the parallel of Mecca (21° 21′), a great deal to the south of the parallel of Kapilavastu (27°), the birthplace of the Buddha Gautama; on the other hand, its northern margin does not include Rai (Rhagae) near Teheran, and still less Balkh (Bactra). As we have already mentioned, it was in one

[1] From The Races of Man, from the German of Oscar Peschel, pp. 314–318, New York, 1894. By permission of D. Appleton & Co.

of these towns that Zoroaster was born. Yet there is some truth in the observation of the Arabian geographers, that the founders of the higher and still existing religions, Zoroaster, Moses, Buddha, Christ, and Mohammed, belong to the subtropical zone. For the birthplace of the latest of the prophets alone falls within the tropics, though only by about seventy-four miles. We make no mention of Confucius, not on account of the high latitude of his birthplace in the district of Yen-chau, in the province of Shan-tung, but because we should degrade the other founders of religion were we to reckon the Chinese moralists among their number.

The fact that the zone of religious founders does not lie within temperate latitudes might be explained by the supposition that it was only in the presence of advanced intellectual development that mankind was able to add a yet higher dignity to human existence by allegiance to ideal objects, and that it was exactly in the subtropical climates that the most ancient social organizations had flourished. But even when civilization in its advance had passed outside the tropics, subtropical Asia still remained the fruitful parent of religions. Christianity did not make its appearance in the overrefined European empire of the Romans, but in Palestine. Islam came into existence six hundred years later, not in Byzantium, but in Arabia. In the cold of the temperate zone man has always been obliged to struggle hard for his existence, working more than praying, so that the burden of the day's labor constantly withheld him from deep inward meditation. In warm countries, on the contrary, where nature facilitates the acquisition of the necessaries of life, and the sultry hours of midday prohibit any bodily exertions, opportunities for mental absorption are far more abundant.

The place of abode is not, however, quite without influence on the direction taken by religious thought. The three monotheistic doctrines, Judaism, Christianity, Islam, originated with the Semitic nations, yet the tendency of the race was not exclusively to monotheism; for other Semites, such as the Phœnicians, Chaldeans, and Assyrians, took other courses, while even among the Jews reversions to polytheism were frequent, and in Egypt

especially the people of God sank completely into idolatry. The perpetual reappearance of monotheism received powerful support from the surrounding scenes of nature.

All who have been in the desert extol its beneficent influence on the health and spirits. Aloys Sprenger declares that the air of the desert invigorated him more than that of the high Alps or of the Himalayas, and in a letter to the author he says: "The desert has impressed the Arabs with their remarkable historical character. In the boundless plains the imagination which guides the youth of men is filled with images quite different from those suggested by forest country. The thoughts thus acquired are rather noble than numerous; out of his own consciousness of power man evolves for himself a yet bolder personality — a personal God by whom he is guided in his wanderings." Lastly, in nomadic life, it frequently happens that a herdsman roams about in solitude for weeks, tortured by hunger and thirst. Even the healthiest then suffers from illusions of the senses. In this state it often occurs that the forsaken wanderer hears voices speaking and calling to him; hence in Arabic there is a special word *Hâtif* for voices of this sort. In Africa, again, *Ragl*, derived from *Ragol*, the man, signifies such anthropomorphous ocular illusions.

Every traveler who has crossed the deserts of Arabia and Asia Minor speaks enthusiastically of their beauties; all praise their atmosphere and brightness, and tell of a feeling of invigoration and a perceptible increase of intellectual elasticity; hence between the arched heavens and the unbounded expanse of plain a monotheistic frame of mind necessarily steals upon the children of the desert. The confusion of the Egyptian pantheon, the beautiful images of stone, the sacred animals, the human figures with emblematic heads and symbols, were not forgotten by Moses, the priest of Heliopolis, until he fled to Sinai, the oldest rock known to geology, which, according to Oscar Fraas, is still uncovered by the smallest particle of any more recent formation, seeming as if it had never been submerged beneath the sea, had never risen up, never moved. Here in the wilderness it was necessary that the old Jewish race, with its Egyptian paganism, should be buried, before monotheism as a result of the thoughts

and sights of the desert, could rise and strengthen itself in a new race. In other parts of the Scriptures the healthy influence of the desert is likewise testified. The zealous Elijah retired into the desert; John the Baptist also preached in the desert of Jordan, clad as a Bedouin, in a raiment of camel's hair, and living on locusts and wild honey. Christ also prepared himself for his career by passing forty days and forty nights in the desert. Lastly, Mohammed, although born in a city, imbibed the milk of a Bedouin foster mother, lived for a long time as a shepherd, and in his caravan journeys crossed the deserts between his own country and Palestine. The pilgrimages to Mecca, although far more ancient than Islam, are of no little service in strengthening the faith, inasmuch as they are preceded by a journey across the desert. But even independently of this, the followers of the Prophet live in the vicinity of deserts, for the doctrine of Mohammed has spread almost exclusively in the zone of eastern monsoons, and only in very late times extended into Africa as far as the Sudan. In India it was unable to extend beyond very narrow limits, and that only with political assistance.

This is probably all that can be accurately ascertained in regard to the influence of the nature of the country on the tendency of the religious feeling of the population. The desert contributes materially to awakening monotheism, because, from the dryness and clearness of its atmosphere, it does not expose the senses to all the attractive phantoms of forest scenery, — the sunbeams as they play through the openings in the trees on the trembling and shining leaves, the marvelous forms of the gnarled branches, creeping roots, and storm-stricken trunks; the creaking and sighing, the whispering and roaring, the hissing and rustling, and all the voices and sounds in wood and forest, amid which the illusion of an invisible animation is so apt to overcome us. Neither do curling mists sweep and steal over the desert as on damp meadow lands. These cloud forms, as they rise over the forests of New Guinea, are venerated by the nations of Doreh as a visible manifestation of their good spirit Narvojé. It may therefore be asserted that with the extermination of the forests not only is the climate of the locality altered, but poetry and

paganism have also been struck with the ax. But if a sunny land is favorable to monotheistic emotions, yet at the same time every religious creation is but an expression of the mental endowments of the race. The Semites never possessed any genuinely epic literature, and their dramatic literature was extremely scanty, for they were destitute of the Aryan capacity for framing such productions. It would be an error to trace all the intellectual productions of nations to previous physical conditions alone. They are assuredly subject to a normal course of development, and are nothing more than the necessary expression of a series of causes. But the historical destinies of the nations are certainly among these causes. "It is an old maxim," says Delbrück, "that it is in the experiences of life that each individual finds or loses his God."

XII

SEXUAL SELECTION IN RELATION TO MAN[1]

Principles of Sexual Selection

With animals which have their sexes separated, the males necessarily differ from the females in their organs of reproduction; and these are the primary sexual characters. But the sexes often differ in what Hunter has called secondary sexual characters, which are not directly connected with the act of reproduction; for instance, the male possesses certain organs of sense or locomotion, of which the female is quite destitute, or has them more highly developed, in order that he may readily find or reach her; or again the male has special organs of prehension for holding her securely. These latter organs, of infinitely diversified kinds, graduate into those which are commonly ranked as primary, and in some cases can hardly be distinguished from them; we see instances of this in the complex appendages at the apex of the abdomen in male insects. Unless indeed we confine the term "primary" to the reproductive glands, it is scarcely possible to decide which ought to be called primary and which secondary.

The female often differs from the male in having organs for the nourishment or protection of her young, such as the mammary glands of mammals and the abdominal sacks of the marsupials. In some few cases also the male possesses similar organs, which are wanting in the female, such as the receptacles for the ova in certain male fishes, and those temporarily developed in certain male frogs. The females of most bees are provided with a special apparatus for collecting and carrying pollen, and their ovipositor is modified into a sting for the defense of the larvæ and the community. Many similar cases could be given, but they do not here concern us. There are, however, other sexual differences

[1] From The Descent of Man, by Charles Darwin, second edition, London, 1874.

quite unconnected with the primary reproductive organs, and it is with these that we are more especially concerned, — such as the greater size, strength, and pugnacity of the male, his weapons of offense or means of defense against rivals, his gaudy coloring and various ornaments, his power of song, and other such characters.

Besides the primary and secondary sexual differences, such as the foregoing, the males and females of some animals differ in structures related to different habits of life, and not at all, or only indirectly, to the reproductive functions. Thus the females of certain flies (Culicidæ and Tabanidæ) are blood suckers, while the males, living on flowers, have mouths destitute of mandibles.[1] The males of certain moths and of some crustaceans (e.g. Tanais) have imperfect, closed mouths, and cannot feed. The complemental males of certain Cirripedes live like epiphytic plants either on the female or the hermaphrodite form, and are destitute of a mouth and of prehensile limbs. In these cases it is the male which has been modified and has lost certain important organs, which the females possess. In other cases it is the female which has lost such parts; for instance, the female glowworm is destitute of wings, as also are many female moths, some of which never leave their cocoons. Many female parasitic crustaceans have lost their natatory legs. In some weevil beetles (Curculionidæ) there is a great difference between the male and female in the length of the rostrum or snout;[2] but the meaning of this and of many analogous differences is not at all understood. Differences of structure between the two sexes in relation to different habits of life are generally confined to the lower animals; but with some few birds the beak of the male differs from that of the female. In the Huia of New Zealand the difference is wonderfully great, and we hear from Dr. Buller[3] that the male uses his strong beak in chiseling the larvæ of insects out of decayed wood, while the female probes the softer parts with her far longer, much curved, and pliant beak; and thus they mutually aid each

[1] Westwood, Modern Classification of Insects, Vol. II, 1840, p. 541. For the statement about Tanais, mentioned below, I am indebted to Fritz Müller.

[2] Kirby and Spence, Introduction to Entomology, Vol. III, 1826, p. 309.

[3] Birds of New Zealand, 1872, p. 66.

other. In most cases, differences of structure between the sexes are more or less directly connected with the propagation of the species; thus a female, which has to nourish a multitude of ova, requires more food than the male, and consequently requires special means for procuring it. A male animal, which lives for a very short time, might lose its organs for procuring food through disuse, without detriment; but he would retain his locomotive organs in a perfect state, so that he might reach the female. The female, on the other hand, might safely lose her organs for flying, swimming, or walking, if she gradually acquired habits which rendered such powers useless.

We are, however, here concerned only with sexual selection. This depends on the advantage which certain individuals have over others of the same sex and species solely in respect of reproduction. When, as in the cases above mentioned, the two sexes differ in structure in relation to different habits of life, they have no doubt been modified through natural selection, and by inheritance limited to one and the same sex. So again the primary sexual organs, and those for nourishing or protecting the young, come under the same influence; for those individuals which generated or nourished their offspring best would leave, *caeteris paribus*, the greatest number to inherit their superiority; while those which generated or nourished their offspring badly would leave but few to inherit their weaker powers. As the male has to find the female, he requires organs of sense and locomotion, but if these organs are necessary for the other purposes of life, as is generally the case, they will have been developed through natural selection. When the male has found the female he sometimes absolutely requires prehensile organs to hold her; thus Dr. Wallace informs me that the males of certain moths cannot unite with the females if their tarsi or feet are broken. The males of many oceanic crustaceans, when adult, have their legs and antennæ modified in an extraordinary manner for the prehension of the female; hence we may suspect that it is because these animals are washed about by the waves of the open sea that they require these organs in order to propagate their kind, and if so, their development has been the result of

ordinary or natural selection. Some animals extremely low in the scale have been modified for this same purpose; thus the males of certain parasitic worms, when fully grown, have the lower surface of the terminal part of their bodies roughened like a rasp, and with this they coil round and permanently hold the females.[1]

When the two sexes follow exactly the same habits of life, and the male has the sensory or locomotive organs more highly developed than those of the female, it may be that the perfection of these is indispensable to the male for finding the female; but in the vast majority of cases they serve only to give one male an advantage over another, for with sufficient time the less well-endowed males would succeed in pairing with the females; and judging from the structure of the female, they would be in all other respects equally well adapted for their ordinary habits of life. Since in such cases the males have acquired their present structure, not from being better fitted to survive in the struggle for existence, but from having gained an advantage over other males, and from having transmitted this advantage to their male offspring alone, sexual selection must here have come into action. It was the importance of this distinction which led me to designate this form of selection as Sexual Selection. So again, if the chief service rendered to the male by his prehensile organs is to prevent the escape of the female before the arrival of other males, or when assaulted by them, these organs will have been perfected through sexual selection, that is, by the advantage acquired by certain individuals over their rivals. But in most cases of this kind it is impossible to distinguish between the effects of natural and sexual selection. Whole chapters could be filled with details

[1] M. Perrier advances this case (*Revue Scientifique*, February 1, 1873, p. 865) as one fatal to the belief in sexual selection, inasmuch as he supposes that I attribute all the differences between the sexes to sexual selection. This distinguished naturalist, therefore, like so many other Frenchmen, has not taken the trouble to understand even the first principles of sexual selection. An English naturalist insists that the claspers of certain male animals could not have been developed through the choice of the female! Had I not met with this remark, I should not have thought it possible for any one to have read this chapter and to have imagined that I maintain that the choice of the female had anything to do with the development of the prehensile organs in the male.

on the differences between the sexes in their sensory, locomotive, and prehensile organs. As, however, these structures are not more interesting than others adapted for the ordinary purposes of life, I shall pass them over almost entirely, giving only a few instances under each class.

There are many other structures and instincts which must have been developed through sexual selection, such as the weapons of offense and the means of defense of the males for fighting with and driving away their rivals, their courage and pugnacity, their various ornaments, their contrivances for producing vocal or instrumental music, and their glands for emitting odors, most of these latter structures serving only to allure or excite the female. It is clear that these characters are the result of sexual and not of ordinary selection, since unarmed, unornamented, or unattractive males would succeed equally well in the battle for life and in leaving a numerous progeny, but for the presence of better endowed males. We may infer that this would be the case, because the females, which are unarmed and unornamented, are able to survive and procreate their kind. Secondary sexual characters of the kind just referred to will be fully discussed in the following chapters, as being in many respects interesting, but especially as depending on the will, choice, and rivalry of the individuals of either sex. When we behold two males fighting for the possession of the female, or several male birds displaying their gorgeous plumage, and performing strange antics before an assembled body of females, we cannot doubt that, though led by instinct, they know what they are about, and consciously exert their mental and bodily powers.

Just as man can improve the breed of his gamecocks by the selection of those birds which are victorious in the cockpit, so it appears that the strongest and most vigorous males, or those provided with the best weapons, have prevailed under nature, and have led to the improvement of the natural breed or species. A slight degree of variability leading to some advantage, however slight, in reiterated deadly contests would suffice for the work of sexual selection; and it is certain that secondary sexual characters are eminently variable. Just as man can give beauty, according

to his standard of taste, to his male poultry, or, more strictly, can modify the beauty originally acquired by the parent species, can give to the Sebright bantam a new and elegant plumage, an erect and peculiar carriage, so it appears that female birds in a state of nature have by a long selection of the more attractive males added to their beauty or other attractive qualities. No doubt this implies powers of discrimination and taste on the part of the female which will at first appear extremely improbable; but by the facts to be adduced hereafter, I hope to be able to show that the females actually have these powers. When, however, it is said that the lower animals have a sense of beauty, it must not be supposed that such sense is comparable with that of a cultivated man, with his multiform and complex associated ideas. A more just comparison would be between the taste for the beautiful in animals and that in the lowest savages, who admire and deck themselves with any brilliant, glittering, or curious object.

From our ignorance on several points the precise manner in which sexual selection acts is somewhat uncertain. Nevertheless, if those naturalists who already believe in the mutability of species will read the following chapters, they will, I think, agree with me that sexual selection has played an important part in the history of the organic world. It is certain that among almost all animals there is a struggle between the males for the possession of the female. This fact is so notorious that it would be superfluous to give instances. Hence the females have the opportunity of selecting one out of several males, on the supposition that their mental capacity suffices for the exertion of a choice. In many cases special circumstances tend to make the struggle between the males particularly severe. Thus the males of our migratory birds generally arrive at their places of breeding before the females, so that many males are ready to contend for each female. I am informed by Mr. Jenner Weir that the bird-catchers assert that this is invariably the case with the nightingale and blackcap, and with respect to the latter he can himself confirm the statement.

Mr. Swaysland of Brighton has been in the habit, during the last forty years, of catching our migratory birds on their first

arrival, and he has never known the females of any species to arrive before their males. During one spring he shot thirty-nine males of Ray's wagtail (*Budytes Raii*) before he saw a single female. Mr. Gould has ascertained by the dissection of those snipes which arrive the first in this country that the males come before the females. And the like holds good with most of the migratory birds of the United States.[1] The majority of the male salmon in our rivers, on coming up from the sea, are ready to breed before the females. So it appears to be with frogs and toads. Throughout the great class of insects the males almost always are the first to emerge from the pupal state, so that they generally abound for a time before any females can be seen.[2] The cause of this difference between the males and females in their periods of arrival and maturity is sufficiently obvious. Those males which annually first migrated into any country, or which in the spring were first ready to breed, or were the most eager, would leave the largest number of offspring; and these would tend to inherit similar instincts and constitutions. It must be borne in mind that it would have been impossible to change very materially the time of sexual maturity in the females without at the same time interfering with the period of the production of the young, —a period which must be determined by the seasons of the year. On the whole, there can be no doubt that with almost all animals, in which the sexes are separate, there is a constantly recurrent struggle between the males for the possession of the females.

Our difficulty in regard to sexual selection lies in understanding how it is that the males which conquer other males, or those which prove the most attractive to the females, leave a greater number of offspring to inherit their superiority than their beaten

[1] J. A. Allen, on the "Mammals and Winter Birds of E. Florida," *Bull. Comp. Zoölogy* (Harvard College), p. 268.

[2] Even with those plants in which the sexes are separate, the male flowers are generally mature before the female. As first shown by C. K. Sprengel, many hermaphrodite plants are dichogamous; that is, their male and female organs are not ready at the same time, so that they cannot be self-fertilized. Now in such flowers the pollen is in general matured before the stigma, though there are exceptional cases in which the female organs are beforehand.

and less attractive rivals. Unless this result does follow, the characters which give to certain males an advantage over others could not be perfected and augmented through sexual selection. When the sexes exist in exactly equal numbers the worst-endowed males will (except where polygamy prevails) ultimately find females, and leave as many offspring, as well fitted for their general habits of life, as the best-endowed males. From various facts and considerations I formerly inferred that with most animals in which secondary sexual characters are well developed, the males considerably exceeded the females in number; but this is not by any means always true. If the males were to the females as two to one, or as three to two, or even in a somewhat lower ratio, the whole affair would be simple; for the better-armed or more attractive males would leave the largest number of offspring. But after investigating as far as possible the numerical proportion of the sexes, I do not believe that any great inequality in number commonly exists. In most cases sexual selection appears to have been effective in the following manner.

Let us take any species, a bird for instance, and divide the females inhabiting a district into two equal bodies, the one consisting of the more vigorous and better-nourished individuals, and the other of the less vigorous and healthy. The former, there can be little doubt, would be ready to breed in the spring before the others; and this is the opinion of Mr. Jenner Weir, who has carefully attended to the habits of birds during many years. There can also be no doubt that the most vigorous, best-nourished, and earliest breeders would on an average succeed in rearing the largest number of fine offspring.[1] The males, as we have seen, are generally ready to breed before the females; the strongest, and with some some species the best armed of the males, drive away the weaker; and the former would then unite with the

[1] Here is excellent evidence on the character of the offspring from an experienced ornithologist. Mr. J. A. Allen, in speaking ("Mammals and Winter Birds of E. Florida," p. 229) of the later broods, after the accidental destruction of the first, says, that these "are found to be smaller and paler-colored than those hatched earlier in the season. In cases where several broods are reared each year, as a general rule the birds of the earlier broods seem in all respects the most perfect and vigorous."

more vigorous and better-nourished females, because they are the first to breed.[1] Such vigorous pairs would surely rear a larger number of offspring than the retarded females, which would be compelled to unite with the conquered and less powerful males, supposing the sexes to be numerically equal; and this is all that is wanted to add, in the course of successive generations, to the size, strength, and courage of the males, or to improve their weapons.

But in very many cases the males which conquer their rivals do not obtain possession of the females, independently of the choice of the latter. The courtship of animals is by no means so simple and short an affair as might be thought. The females are most excited by, or prefer pairing with, the more ornamented males, or those which are the best songsters, or play the best antics; but it is obviously probable that they would at the same time prefer the more vigorous and lively males, and this has in some cases been confirmed by actual observation.[2] Thus the more vigorous females, which are the first to breed, will have the choice of many males; and though they may not always select the strongest or best armed, they will select those which are vigorous and well armed, and in other respects the most attractive. Both sexes, therefore, of such early pairs would, as above explained, have an advantage over others in rearing offspring; and this apparently has sufficed during a long course of generations to add not only to the strength and fighting powers of the males, but likewise to their various ornaments or other attractions.

In the converse and much rarer case of the males selecting particular females, it is plain that those which were the most vigorous and had conquered others would have the freest choice; and it is almost certain that they would select vigorous as well

[1] Hermann Müller has come to this same conclusion with respect to those female bees which are the first to emerge from the pupa each year. See his remarkable essay, "Anwendung der Darwin'schen Lehre auf Bienen," *Verhandlungen des naturhistorischen Vereins*, Jahrgang XXIX, p. 45.

[2] With respect to poultry, I have received information, hereafter to be given, to this effect. Even with birds, such as pigeons, which pair for life, the female, as I hear from Mr. Jenner Weir, will desert her mate if he is injured or grows weak.

as attractive females. Such pairs would have an advantage in rearing offspring, more especially if the male had the power to defend the female during the pairing season, as occurs with some of the higher animals, or aided her in providing for the young. The same principles would apply if each sex preferred and selected certain individuals of the opposite sex, supposing that they selected not only the more attractive but likewise the more vigorous individuals.

Numerical Proportion of the Two Sexes

I have remarked that sexual selection would be a simple affair if the males were considerably more numerous than the females. Hence I was led to investigate, as far as I could, the proportions between the two sexes of as many animals as possible; but the materials are scanty. I will here give only a brief abstract of the results, retaining the details for a supplementary discussion, so as not to interfere with the course of my argument. Domesticated animals alone afford the means of ascertaining the proportional numbers at birth; but no records have been specially kept for this purpose. By indirect means, however, I have collected a considerable body of statistics, from which it appears that with most of our domestic animals the sexes are nearly equal at birth. Thus 25,560 births of race horses have been recorded during twenty-one years, and the male births were to the female births as 99.7 to 100. In greyhounds the inequality is greater than with any other animal, for out of 6878 births during twelve years, the male births were to the female as 110.1 to 100. It is, however, in some degree doubtful whether it is safe to infer that the proportion would be the same under natural conditions as under domestication; for slight and unknown differences in the conditions affect the proportion of the sexes. Thus with mankind, the male births in England are as 104.5, in Russia as 108.9, and with the Jews of Livonia as 120, to 100 female births. At the Cape of Good Hope, however, male children of European extraction have been born during several years in the proportion of between 90 and 99 to 100 female children.

For our present purpose we are concerned with the proportion of the sexes not only at birth but also at maturity, and this adds another element of doubt; for it is a well-ascertained fact that with man the number of males dying before or during birth, and during the first few years of infancy, is considerably larger than that of females. So it almost certainly is with male lambs and probably with some other animals. The males of some species kill one another by fighting, or they drive one another about until they become greatly emaciated. They must also be often exposed to various dangers, while wandering about in eager search for the females. In many kinds of fish the males are much smaller than the females, and they are believed often to be devoured by the latter, or by other fishes. The females of some birds appear to die earlier than the males; they are also liable to be destroyed on their nests, or while in charge of their young. With insects the female larvæ are often larger than those of the males, and would consequently be more likely to be devoured. In some cases the mature females are less active and less rapid in their movements than the males, and could not escape so well from danger. Hence, with animals in a state of nature, we must rely on mere estimation, in order to judge of the proportions of the sexes at maturity; and this is but little trustworthy, except when the inequality is strongly marked.

The proportion between the sexes fluctuates slightly during successive years: thus with race horses, for every 100 mares born the stallions varied from 107.1 in one year to 92.6 in another year, and with greyhounds from 116.3 to 95.3. But had larger numbers been tabulated throughout an area more extensive than England, these fluctuations would probably have disappeared, and such as they are, would hardly suffice to lead to effective sexual selection in a state of nature. Nevertheless, in the cases of some few wild animals, the proportions seem to fluctuate either during different seasons or in different localities in a sufficient degree to lead to such selection. For it should be observed that any advantage, gained during certain years or in certain localities by those males which were able to conquer their rivals, or were the most attractive to the females, would probably be transmitted

to the offspring, and would not subsequently be eliminated. During the succeeding seasons when, from the equality of the sexes, every male was able to procure a female, the stronger or more attractive males previously produced would still have at least as good a chance of leaving offspring as the weaker or less attractive.

Polygamy

The practice of polygamy leads to the same results as would follow from an actual inequality in the number of the sexes; for if each male secures two or more females, many males cannot pair; and the latter assuredly will be the weaker or less attractive individuals. Many mammals and some few birds are polygamous, but with animals belonging to the lower classes I have found no evidence of this habit. The intellectual powers of such animals are, perhaps, not sufficient to lead them to collect and guard a harem of females. That some relation exists between polygamy and the development of secondary sexual characters appears nearly certain; and this supports the view that a numerical preponderance of males would be eminently favorable to the action of sexual selection. Nevertheless, many animals, which are strictly monogamous, especially birds, display strongly marked secondary sexual characters; while some few animals, which are polygamous, do not have such characters.

We will first briefly run through the mammals, and then turn to birds. The gorilla seems to be polygamous, and the male differs considerably from the female; so it is with some baboons, which live in herds containing twice as many adult females as males. In South America the *Mycetes caraya* presents well-marked sexual differences, in color, beard, and vocal organs; and the male generally lives with two or three wives; the male of the *Cebus capucinus* differs somewhat from the female, and appears to be polygamous.[1] Little is known on this head with respect to most other monkeys, but some species are strictly

[1] On the gorilla, see Savage and Wyman, *Boston Journal of Natural History*, 1845–1847, Vol. V, p. 423. On Cynocephalus, see Brehm, *Illust. Thierleben*, 1864, Band I, Seite 77. On Mycetes, see Rengger, Naturgesch.: "Säugethiere von Paraguay," 1830, Seite 14, 20. On Cebus, see Brehm, *ibid.*, Seite 108.

monogamous. The ruminants are eminently polygamous, and they present sexual differences more frequently than almost any other group of mammals; this holds good, especially in their weapons, but also in other characters. Most deer, cattle, and sheep are polygamous, as are most antelopes, though some are monogamous. Sir Andrew Smith, in speaking of the antelopes of South Africa, says that in herds of about a dozen there was rarely more than one mature male. The Asiatic *Antilope saiga* appears to be the most inordinate polygamist in the world; for Pallas [1] states that the male drives away all rivals and collects a herd of about a hundred females and kids together; the female is hornless and has softer hair, but does not otherwise differ much from the male. The wild horse of the Falkland Islands and of the Western States of North America is polygamous, but, except in his greater size and in the proportions of his body, differs but little from the mare. The wild boar presents well-marked sexual characters, in his great tusks and some other points. In Europe and in India he leads a solitary life, except during the breeding season; but as is believed by Sir W. Elliot, who has had many opportunities in India of observing this animal, he consorts at this season with several females. Whether this holds good in Europe is doubtful, but it is supported by some evidence. The adult male Indian elephant, like the boar, passes much of his time in solitude; but as Dr. Campbell states, when with others, "it is rare to find more than one male with a whole herd of females"; the larger males expelling or killing the smaller and weaker ones. The male differs from the female in his immense tusks, greater size, strength, and endurance; so great is the difference in these respects that the males when caught are valued at one fifth more than the females.[2] The sexes of other pachydermatous animals differ very little or not at all, and, as far as known, they are not polygamists. Nor have I heard of any

[1] Pallas, Spicilegia Zoolog., 1777, Fasc. XII, p. 29. Sir Andrew Smith's Illustrations of the Zoölogy of South Africa, 1849, Plate XXIX, on the Kobus. Owen, in his Anatomy of Vertebrates (1868, Vol. III, p. 633), gives a table showing incidentally which species of antelopes are gregarious.

[2] Dr. Campbell, in *Proc. Zoölog. Soc.*, 1869, p. 138. See also an interesting paper, by Lieutenant Johnstone, in *Proc. Asiatic Soc. of Bengal*, May, 1868.

species in the orders of Cheiroptera, Edentata, Insectivora, and rodents being polygamous, excepting that among the rodents, the common rat, according to some rat-catchers, lives with several females. Nevertheless, the two sexes of some sloths (Edentata) differ in the character and color of certain patches of hair on their shoulders.[1] And many kinds of bats (Cheiroptera) present well-marked sexual differences, chiefly in the males possessing odoriferous glands and pouches, and by their being of a lighter color.[2] In the great order of Rodents, as far as I can learn, the sexes rarely differ, and when they do so it is but slightly in the tint of the fur.

As I hear from Sir Andrew Smith, the lion in South Africa sometimes lives with a single female, but generally with more, and, in one case, was found with as many as five females; so that he is polygamous. As far as I can discover, he is the only polygamist among all the terrestrial Carnivora, and he alone presents well-marked sexual characters. If, however, we turn to the marine Carnivora, as we shall hereafter see, the case is widely different; for many species of seals offer extraordinary sexual differences, and they are eminently polygamous. Thus, according to Péron, the male sea elephant of the Southern Ocean always possesses several females, and the sea lion of Forster is said to be surrounded by from twenty to thirty females. In the North the male sea bear of Steller is accompanied by even a greater number of females. It is an interesting fact, as Dr. Gill remarks,[3] that in the monogamous species, "or those living in small communities, there is little difference in size between the males and females; in the social species, or rather those of which the males have harems, the males are vastly larger than the females."

Among birds, many species, the sexes of which differ greatly from each other, are certainly monogamous. In Great Britain we see well-marked sexual differences, for instance, in the wild duck, which pairs with a single female, the common blackbird, and the bullfinch, which is said to pair for life. I am informed by

[1] Dr. Gray, in *Annals and Magazine of Natural History*, 1871, p. 302.
[2] See Dr. Dobson's excellent paper, in *Proc. Zoölog. Soc.* 1873, p. 241.
[3] "The Eared Seals," *American Naturalist*, January, 1871, Vol. IV.

Mr. Wallace that the like is true of the Chatterers or Cotingidæ of South America, and of many other birds. In several groups I have not been able to discover whether the species are polygamous or monogamous. Lesson says that birds of paradise, so remarkable for their sexual differences, are polygamous, but Mr. Wallace doubts whether he had sufficient evidence. Mr. Salvin tells me he has been led to believe that humming birds are polygamous. The male widow bird, remarkable for his caudal plumes, certainly seems to be a polygamist.[1] I have been assured by Mr. Jenner Weir, and by others, that it is somewhat common for three starlings to frequent the same nest; but whether this is a case of polygamy or polyandry has not been ascertained.

The Gallinaceæ exhibit almost as strongly marked sexual differences as birds of paradise or humming birds, and many of the species are, as is well known, polygamous, others being strictly monogamous. What a contrast is presented between the sexes of the polygamous peacock or pheasant and the monogamous guinea fowl or partridge! Many similar cases could be given, as in the grouse tribe, in which the males of the polygamous capercailzie and blackcock differ greatly from the females; while the sexes of the monogamous red grouse and ptarmigan differ very little. In the Cursores, except among the bustards, few species offer strongly marked sexual differences, and the great bustard (*Otis tarda*) is said to be polygamous. With the Grallatores extremely few species differ sexually, but the ruff (*Machetes pugnax*) affords a marked exception, and this species is believed by Montagu to be a polygamist. Hence it appears that among birds there often exists a close relation between polygamy and the development of strongly marked sexual differences. I asked Mr. Bartlett, of the Zoölogical Gardens, who has had very large experience with birds, whether the male tragopan (one of the Gallinaceæ) was polygamous, and I was struck by his answering, "I do not know, but should think so from his splendid colors."

[1] The Ibis, 1861, Vol. III, p. 133, on the progne widow bird. See also on the *Vidua axillaris*, *ibid.*, 1860, Vol. II, p. 211. On the polygamy of the capercailzie and great bustard, see L. Lloyd's Game Birds of Sweden, 1867, pp. 19, 182. Montagu and Selby speak of the black grouse as polygamous and of the red grouse as monogamous.

It deserves notice that the instinct of pairing with a single female is easily lost under domestication. The wild duck is strictly monogamous, the domestic duck highly polygamous. The Rev. W. D. Fox informs me that out of some half-tamed wild ducks, on a large pond in his neighborhood, so many mallards were shot by the gamekeeper that only one was left for every seven or eight females; yet unusually large broods were reared. The guinea fowl is strictly monogamous; but Mr. Fox finds that his birds succeed best when he keeps one cock to two or three hens. Canary birds pair in a state of nature, but the breeders in England successfully put one male to four or five females. I have noticed these cases, as rendering it probable that wild monogamous species might readily become either temporarily or permanently polygamous.

Too little is known of the habits of reptiles and fishes to enable us to speak of their marriage arrangements. The stickleback (Gasterosteus), however, is said to be a polygamist;[1] and the male during the breeding season differs conspicuously from the female.

To sum up on the means through which, as far as we can judge, sexual selection has led to the development of secondary sexual characters; it has been shown that the largest number of vigorous offspring will be reared from the pairing of the strongest and best-armed males, victorious in contests over other males, with the most vigorous and best-nourished females, which are the first to breed in the spring. If such females select the more attractive and at the same time vigorous males, they will rear a larger number of offspring than the retarded females, which must pair with the less vigorous and less attractive males. So it will be if the more vigorous males select the more attractive and at the same time healthy and vigorous females; and this will especially hold good if the male defends the female, and aids in providing food for the young. The advantage thus gained by the more vigorous pairs in rearing a larger number of offspring has apparently sufficed to render sexual selection efficient. But a large numerical preponderance of males over females will be

[1] Noel Humphreys, River Gardens, 1857.

still more efficient, whether the preponderance is only occasional and local, or permanent, whether it occurs at birth, or afterward from the greater destruction of the females, or whether it indirectly follows from the practice of polygamy.

The Male Generally More Modified than the Female

Throughout the animal kingdom, when the sexes differ in external appearance, it is, with rare exceptions, the male which has been the more modified; for generally the female retains a closer resemblance to the young of her own species and to other adult members of the same group. The cause of this seems to lie in the males of almost all animals having stronger passions than the females. Hence it is the males that fight together and sedulously display their charms before the females; and the victors transmit their superiority to their male offspring. Why both sexes do not thus acquire the characters of their fathers will be considered hereafter. That the males of all mammals eagerly pursue the females is notorious to every one. So it is with birds; but many cock birds do not so much pursue the hen as display their plumage, perform strange antics, and pour forth their song in her presence. The male in the few fish observed seems much more eager than the female; and the same is true of alligators, and apparently of Batrachians. Throughout the enormous class of insects, as Kirby remarks,[1] "the law is, that the male shall seek the female." Two good authorities, Mr. Blackwall and Mr. C. Spence Bate, tell me that the males of spiders and crustaceans are more active and more erratic in their habits than the females. When the organs of sense or locomotion are present in the one sex of insects and crustaceans and absent in the other, or when, as is frequently the case, they are more highly developed in the one than in the other, it is, as far as I can discover, almost invariably the male which retains such organs, or has them most developed; and this shows that the male is the more active member in the courtship of the sexes.[2]

[1] Kirby and Spence, Introduction to Entomology, 1826, Vol. III, p. 342.

[2] One parasitic hymenopterous insect (Westwood, Modern Classification of Insects, Vol. II, p. 160) forms an exception to the rule, as the male has rudimentary wings

The female, on the other hand, with the rarest exceptions, is less eager than the male. As the illustrious Hunter[1] long ago observed, she generally "requires to be courted"; she is coy, and may often be seen endeavoring for a long time to escape from the male. Every observer of the habits of animals will be able to call to mind instances of this kind. It is shown by various facts, given hereafter, and by the results fairly attributable to sexual selection, that the female, though comparatively passive, generally exerts some choice and accepts one male in preference to others; or she may accept, as appearances would sometimes lead us to believe, not the male which is the most attractive to her, but the one which is the least distasteful. The exertion of some choice on the part of the female seems a law almost as general as the eagerness of the male.

We are naturally led to inquire why the male, in so many and such distinct classes, has become more eager than the female, so that he searches for her, and plays the more active part in courtship. It would be no advantage and some loss of power if each sex searched for the other; but why should the male almost always be the seeker? The ovules of plants after fertilization have to be nourished for a time; hence the pollen is necessarily brought to the female organs, being placed on the stigma by means of insects or the wind, or by the spontaneous movements of the stamens; and in the Algæ, etc., by the locomotive power of the antherozoids. With lowly organized aquatic animals, permanently affixed to the same spot and having their sexes separate, the male element is invariably brought to the female; and of this we can see the reason, for even if the ova were detached before fertilization, and did not require subsequent nourishment or protection, there would yet be greater difficulty in transporting them than the male element, because, being

and never quits the cell in which it is born, while the female has well-developed wings. Audouin believes that the females of this species are impregnated by the males which are born in the same cells with them; but it is much more probable that the females visit other cells, so that close interbreeding is thus avoided. We shall hereafter meet in various classes, with a few exceptional cases, in which the female, instead of the male, is the seeker and wooer.

[1] Essays and Observations, edited by Owen, 1861, Vol. I, p. 194.

larger than the latter, they are produced in far smaller numbers. So that many of the lower animals are, in this respect, analogous with plants.[1] The males of affixed and aquatic animals having been led to emit their fertilizing element in this way, it is natural that any of their descendants, which rose in the scale and became locomotive, should retain the same habit, and they would approach the female as closely as possible, in order not to risk the loss of the fertilizing element in a long passage of it through the water. With some few of the lower animals, the females alone are fixed, and the males of these must be the seekers. But it is difficult to understand why the males of species, of which the progenitors were primordially free, should invariably have acquired the habit of approaching the females, instead of being approached by them. But in all cases, in order that the males should seek efficiently, it would be necessary that they should be endowed with strong passions; and the acquirement of such passions would naturally follow from the more eager leaving a larger number of offspring than the less eager.

The great eagerness of the males has thus indirectly led to their much more frequently developing secondary sexual characters than the females. But the development of such characters would be much aided if the males were more liable to vary than the females, as I concluded they were, after a long study of domesticated animals. Von Nathusius, who has had very wide experience, is strongly of the same opinion.[2] Good evidence also in favor of this conclusion can be produced by a comparison of the two sexes in mankind. During the Novara Expedition[3] a vast number of measurements was made of various parts of the body in different races, and the men were found in almost every case to present a greater range of variation than the women; but I

[1] Professor Sachs (Lehrbuch der Botanik, 1870, Seite 633), in speaking of the male and female reproductive cells, remarks, "verhält sich die eine bei der Vereinigung activ, . . . die andere erscheint bei der Vereinigung passiv."

[2] Vorträge über Viehzucht, 1872, p. 63.

[3] Reise der Novara: "Anthropolog. Theil," 1867, Seite 216–269. The results were calculated by Dr. Weisbach from measurements made by Drs. K. Scherzer and Schwarz. On the greater variability of the males of domesticated animals, see my Variation of Animals and Plants under Domestication, 1868, Vol. II, p. 75.

shall have to recur to this subject in a future chapter. Mr. J. Wood,[1] who has carefully attended to the variation of the muscles in man, puts in italics the conclusion that "the greatest number of abnormalities in each subject is found in the males." He had previously remarked that "altogether in 102 subjects the varieties of redundancy were found to be half as many again as in females, contrasting widely with the greater frequency of deficiency in females before described." Professor Macalister likewise remarks[2] that variations in the muscles "are probably more common in males than females." Certain muscles which are not normally present in mankind are also more frequently developed in the male than in the female sex, although exceptions to this rule are said to occur. Dr. Burt Wilder[3] has tabulated the cases of 152 individuals with supernumerary digits, of which 86 were males, and 39, or less than half, females, the remaining 27 being of unknown sex. It should not, however, be overlooked that women would more frequently endeavor to conceal a deformity of this kind than men. Again, Dr. L. Meyer asserts that the ears of man are more variable in form than those of woman.[4] Lastly, the temperature is more variable in man than in woman.[5]

The cause of the greater general variability in the male sex than in the female is unknown, except in so far as secondary sexual characters are extraordinarily variable, and are usually confined to the males; and, as we shall presently see, this fact is, to a certain extent, intelligible. Through the action of sexual and natural selection male animals have been rendered in very many instances widely different from their females; but independently of selection the two sexes, from differing constitutionally, tend to vary in a somewhat different manner. The female has to expend much organic matter in the formation of her ova, whereas the male expends much force in fierce contests with his rivals, in

[1] *Proceedings Royal Society*, July, 1868, Vol. XVI, pp. 519, 524.

[2] *Proceedings Royal Irish Academy*, 1868, Vol. X, p. 123.

[3] *Massachusetts Medical Society*, 1868, Vol. II, No. 3, p. 9.

[4] *Archiv für Path., Anat. und Phys.*, 1871, p. 488.

[5] The conclusions recently arrived at by Dr. J. Stockton Hough, on the temperature of man, are given in the *Popular Science Review*, January 1, 1874, p. 97.

wandering about in search of the female, in exerting his voice, pouring out odoriferous secretions, etc.; and this expenditure is generally concentrated within a short period. The great vigor of the male during the season of love seems often to intensify his colors, independently of any marked difference from the female.[1] In mankind, and even as low down in the organic scale as in the Lepidoptera, the temperature of the body is higher in the male than in the female, accompanied in the case of man by a slower pulse.[2] On the whole, the expenditure of matter and force by the two sexes is probably nearly equal, though effected in very different ways and at different rates.

From the causes just specified the two sexes can hardly fail to differ somewhat in constitution, at least during the breeding season; and although they may be subjected to exactly the same conditions, they will tend to vary in a different manner. If such variations are of no service to either sex, they will not be accumulated and increased by sexual or natural selection. Nevertheless, they may become permanent if the exciting cause acts permanently; and in accordance with a frequent form of inheritance they may be transmitted to that sex alone in which they first appeared. In this case the two sexes will come to present permanent, yet unimportant, differences of character. For instance, Mr. Allen shows that with a large number of birds inhabiting the northern and southern United States, the specimens from the south are darker colored than those from the north; and this seems to be the direct result of the difference in temperature, light, etc., between the two regions. Now, in some few cases, the two sexes of the same species appear to have been differently affected: in the *Ageloeus phaeniceus* the males have had their colors greatly intensified in the south; whereas with *Cardinalis virginianus* it

[1] Professor Mantegazza is inclined to believe ("Lettera a Carlo Darwin," *Archivio per l'Antropologia*, 1871, p. 306) that the bright colors, common in so many male animals, are due to the presence and retention by them of the spermatic fluid; but this can hardly be the case, for many male birds, for instance young pheasants, become brightly colored in the autumn of their first year.

[2] For mankind, see Dr. J. Stockton Hough, whose conclusions are given in the *Popular Science Review*, 1874, p. 97. See Girard's observations on the Lepidoptera, as given in the *Zoölogical Record*, 1869, p. 347.

is the females which have been thus affected; with *Quiscalus major* the females have been rendered extremely variable in tint, while the males remain nearly uniform.[1]

A few exceptional cases occur in various classes of animals, in which the females instead of the males have acquired well-pronounced secondary sexual characters, such as brighter colors, greater size, strength, or pugnacity. With birds there has sometimes been a complete transposition of the ordinary characters proper to each sex, the females having become the more eager in courtship, the males remaining comparatively passive, but apparently selecting the more attractive females, as we may infer from the results. Certain hen birds have thus been rendered more highly colored or otherwise ornamented as well as more powerful and pugnacious than the cocks, these characters being transmitted to the female offspring alone.

It may be suggested that in some cases a double process of selection has been carried on: that the males have selected the more attractive females, and the latter the more attractive males. This process, however, though it might lead to the modification of both sexes, would not make the one sex different from the other, unless indeed their tastes for the beautiful differed; but this is a supposition too improbable to be worth considering in the case of any animal, excepting man. There are, however, many animals in which the sexes resemble each other, both being furnished with the same ornaments, which analogy would lead us to attribute to the agency of sexual selection. In such cases it may be suggested with more plausibility that there has been a double or mutual process of sexual selection; the more vigorous and precocious females selecting the more attractive and vigorous males, the latter rejecting all except the more attractive females. But from what we know of the habits of animals, this view is hardly probable, for the male is generally eager to pair with any female. It is more probable that the ornaments common to both sexes were acquired by one sex, generally the male, and then transmitted to the offspring of both sexes. If, indeed, during a

[1] "Mammals and Winter Birds of E. Florida," *Bull. Comp. Zoölogy* (Harvard College), pp. 234, 280, 295.

lengthened period the males of any species were greatly to exceed the females in number, and then during another lengthened period, but under different conditions, the reverse were to occur, a double but not simultaneous process of sexual selection might easily be carried on, by which the two sexes might be rendered widely different.

We shall hereafter see that many animals exist, of which neither sex is brilliantly colored or provided with special ornaments, and yet the members of both sexes or of one alone have probably acquired simple colors, such as white or black, through sexual selection. The absence of bright tints or other ornaments may be the result of variations of the right kind never having occurred, or of the animals themselves having preferred plain black or white. Obscure tints have often been developed through natural selection for the sake of protection, and the acquirements through sexual selection of conspicuous colors appears to have been sometimes checked from the danger thus incurred. But in other cases the males during long ages may have struggled together for the possession of the females, and yet no effect will have been produced, unless a larger number of offspring were left by the more successful males to inherit their superiority than by the less successful; and this, as previously shown, depends on many complex contingencies.

Sexual selection acts in a less rigorous manner than natural selection. The latter produces its effects by the life or death at all ages of the more or less successful individuals. Death, indeed, not rarely ensues from the conflicts of rival males. But generally the less successful male merely fails to obtain a female, or obtains a retarded and less vigorous female later in the season, or, if polygamous, obtains fewer females; so that they leave fewer, less vigorous, or no offspring. In regard to structures acquired through ordinary or natural selection, there is in most cases, as long as the conditions of life remain the same, a limit to the amount of advantageous modification in relation to certain special purposes; but in regard to structures adapted to make one male victorious over another, either in fighting, or in charming the female, there is no definite limit to the amount of advantageous

modification; so that as long as the proper variations arise the work of sexual selection will go on. This circumstance may partly account for the frequent and extraordinary amount of variability presented by secondary sexual characters. Nevertheless, natural selection will determine that such characters shall not be acquired by the victorious males if they would be highly injurious, either by expending too much of their vital powers, or by exposing them to any great danger. The development, however, of certain structures — of the horns, for instance, in certain stags — has been carried to a wonderful extreme; and in some cases to an extreme which, as far as the general conditions of life are concerned, must be slightly injurious to the male. From this fact we learn that the advantages which favored males derive from conquering other males in battle or courtship, and thus leaving a numerous progeny, are in the long run greater than those derived from rather more perfect adaptation to their conditions of life. We shall further see that the power to charm the female has sometimes been more important than the power to conquer other males in battle.

Laws of Inheritance

In order to understand how sexual selection has acted on many animals of many classes, and in the course of ages has produced a conspicuous result, it is necessary to bear in mind the laws of inheritance, as far as they are known. Two distinct elements are included under the term "inheritance," — the transmission, and the development of characters; but as these generally go together, the distinction is often overlooked. We see this distinction in those characters which are transmitted through the early years of life, but are developed only at maturity or during old age. We see the same distinction more clearly with secondary sexual characters, for these are transmitted through both sexes, though developed in one alone. That they are present in both sexes is manifest when two species, having strongly marked sexual characters, are crossed, for each transmits the characters proper to its own male and female sex to the hybrid offspring of

either sex. The same fact is likewise manifest, when characters proper to the male are occasionally developed in the female when she grows old or becomes diseased, as, for instance, when the common hen assumes the flowing tail feathers, hackles, comb, spurs, voice, and even pugnacity of the cock. Conversely, the same thing is evident, more or less plainly, with castrated males. Again, independently of old age or disease, characters are occasionally transferred from the male to the female, as when, in certain breeds of the fowl, spurs regularly appear in the young and healthy females. But in truth they are simply developed in the female, for in every breed each detail in the structure of the spur is transmitted through the female to her male offspring. Many cases will hereafter be given where the female exhibits, more or less perfectly, characters proper to the male, in whom they must have been first developed, and then transferred to the female. The converse case of the first development of characters in the female and of transference to the male is less frequent; it will therefore be well to give one striking instance. With bees the pollen-collecting apparatus is used by the female alone for gathering pollen for the larvæ, yet in most of the species it is partially developed in the males, to whom it is quite useless, and it is perfectly developed in the males of Bombus or the humble-bee.[1] As not a single other Hymenopterous insect, not even the wasp, which is closely allied to the bee, is provided with a pollen-collecting apparatus, we have no grounds for supposing that male bees primordially collected pollen as well as the females; although we have some reason to suspect that male mammals primordially suckled their young as well as the females. Lastly, in all cases of reversion, characters are transmitted through two, three, or many more generations, and are then developed under certain unknown favorable conditions. This important distinction between transmission and development will be best kept in mind by the aid of the hypothesis of pangenesis. According to this hypothesis, every unit or cell of the body throws off gemmules or undeveloped atoms, which are transmitted to the offspring of both

[1] Hermann Müller, "Anwendung der Darwin'schen Lehre auf Bienen," *Verhandlungen des naturhistorischen Vereins*, Jahrgang XXIX, p. 42.

sexes, and are multiplied by self-division. They may remain undeveloped during the early years of life or during successive generations; and their development into units or cells, like those from which they were derived, depends on their affinity for, and union with, other units or cells previously developed in the due order of growth.

Inheritance at Corresponding Periods of Life

This tendency is well established. A new character, appearing in a young animal, whether it lasts throughout life or is only transient, will, in general, reappear in the offspring at the same age and last for the same time. If, on the other hand, a new character appears at maturity, or even during old age, it tends to reappear in the offspring at the same advanced age. When deviations from this rule occur the transmitted characters much oftener appear before than after the corresponding age. As I have dwelt on this subject sufficiently in another work,[1] I will here merely give two or three instances, for the sake of recalling the subject to the reader's mind. In several breeds of the fowl, the down-covered chickens, the young birds in their first true plumage, and the adults differ greatly from one another, as well as from their common parent form, the *Gallus bankiva;* and these characters are faithfully transmitted by each breed to their offspring at the corresponding periods of life. For instance, the chickens of spangled Hamburgs, while covered with down, have a few dark spots on the head and rump, but are not striped longitudinally, as in many other breeds; in their first true plumage "they are beautifully penciled," that is, each feather is transversely marked by numerous dark bars; but in their second plumage the feathers all become spangled or tipped with a dark round spot.[2] Hence in this breed variations have occurred at,

[1] The Variation of Animals and Plants under Domestication, 1868, Vol. II, p. 75. In the last chapter but one, the provisional hypothesis of pangenesis, above alluded to, is fully explained.

[2] These facts are given on the high authority of a great breeder, Mr. Teebay. See Tegetmeier's Poultry Book, 1868, p. 158. On the characters of chickens of different breeds, and on the breeds of the pigeon, alluded to in the following paragraph, see Variation of Animals, etc., Vol. I, pp. 160, 249; Vol. II, p. 77.

and been transmitted to, three distinct periods of life. The pigeon offers a more remarkable case, because the aboriginal parent species does not undergo any change of plumage with advancing age, excepting that at maturity the breast becomes more iridescent; yet there are breeds which do not acquire their characteristic colors until they have molted two, three, or four times, and these modifications of plumage are regularly transmitted.

Inheritance at Corresponding Seasons of the Year

With animals in a state of nature, innumerable instances occur of characters appearing periodically at different seasons. We see this in the horns of the stag, and in the fur of arctic animals, which becomes thick and white during the winter. Many birds acquire bright colors and other decorations during the breeding season alone. Pallas states [1] that in Siberia domestic cattle and horses become lighter colored during the winter; and I have myself observed and heard of similar strongly marked changes of color, that is, from brownish cream color or reddish brown to a perfect white, in several ponies in England. Although I do not know that this tendency to change the color of the coat during different seasons is transmitted, yet it probably is so, as all shades of color are strongly inherited by the horse. Nor is this form of inheritance, as limited by the seasons, more remarkable than its limitation by age or sex.

Inheritance as limited by Sex

The equal transmission of characters to both sexes is the commonest form of inheritance, at least with those animals which do not present strongly marked sexual differences, and indeed with many of these. But characters are somewhat commonly transferred exclusively to that sex in which they first appear. Ample evidence on this head has been advanced in my work on Variation under Domestication, but a few instances may here be

[1] Novae species Quadrupedum e Glirium ordine, 1778, p. 7. On the transmission of color by the horse, see Variation of Animals, etc., under Domestication, Vol. I, p. 51. Also Vol. II, p. 71, for a general discussion on "Inheritance as limited by Sex."

given. There are breeds of the sheep and goat in which the horns of the male differ greatly in shape from those of the female; and these differences, acquired under domestication, are regularly transmitted to the same sex. As a rule, it is the females alone in cats which are tortoise shell, the corresponding color in the males being rusty red. With most breeds of the fowl the characters proper to each sex are transmitted to the same sex alone. So general is this form of transmission that it is an anomaly when variations in certain breeds are transmitted equally to both sexes. There are also certain subbreeds of the fowl in which the males can hardly be distinguished from one another, while the females differ considerably in color. The sexes of the pigeon in the parent species do not differ in any external character; nevertheless, in certain domesticated breeds the male is colored differently from the female.[1] The wattle in the English carrier pigeon and the crop in the pouter are more highly developed in the male than in the female; and although these characters have been gained through long-continued selection by man, the slight differences between the sexes are wholly due to the form of inheritance which has prevailed; for they have arisen not from, but rather in opposition to, the wish of the breeder.

Most of our domestic races have been formed by the accumulation of many slight variations; and as some of the successive steps have been transmitted to one sex alone, and some to both sexes, we find in the different breeds of the same species all gradations between great sexual dissimilarity and complete similarity. Instances have already been given of the breeds of the fowl and pigeon, and under nature analogous cases are common. With animals under domestication, but whether in nature I will not venture to say, one sex may lose characters proper to it, and may thus come somewhat to resemble the opposite sex; for instance, the males of some breeds of the fowl have lost their masculine tail plumes and hackles. On the other hand, the differences between the sexes may be increased under domestication,

[1] Dr. Chapuis, Le Pigeon Voyageur Belge, 1865, p. 87. Boitard et Corbé, Les Pigeons de Volière, etc., 1824, p. 173. See also, on similar differences in certain breeds at Modena, Le variazioni dei Colombi domestici, del Paolo Bonizzi, 1873.

as with merino sheep, in which the ewes have lost their horns. Again, characters proper to one sex may suddenly appear in the other sex, as in those subbreeds of the fowl in which the hens acquire spurs while young, or as in certain Polish subbreeds, in which the females, as there is reason to believe, originally acquired a crest, and subsequently transferred it to the males. All these cases are intelligible on the hypothesis of pangenesis; for they depend on the gemmules of certain parts, although present in both sexes, becoming, through the influence of domestication, either dormant or developed in either sex.

There is one difficult question which it will be convenient to defer to a future chapter; namely, whether a character at first developed in both sexes could through selection be limited in its development to one sex alone. If, for instance, a breeder observed that some of his pigeons (of which the characters are usually transferred in an equal degree to both sexes) varied into pale blue, could he by long-continued selection make a breed in which the males alone should be of this tint, while the females remained unchanged? I will here only say, that this, though perhaps not impossible, would be extremely difficult; for the natural result of breeding from the pale blue males would be to change the whole stock of both sexes to this tint. If, however, variations of the desired tint appeared, which were from the first limited in their development to the male sex, there would not be the least difficulty in making a breed with the two sexes of a different color, as indeed has been effected with a Belgian breed, in which the males alone are streaked with black. In a similar manner, if any variation appeared in a female pigeon, which was from the first sexually limited in its development to the females, it would be easy to make a breed with the females alone thus characterized; but if the variation was not thus originally limited, the process would be extremely difficult, perhaps impossible.[1]

[1] Since the publication of the first edition of this work it has been highly satisfactory to me to find the following remarks (*The Field*, September, 1872) from so experienced a breeder as Mr. Tegetmeier. After describing some curious cases in pigeons, of the transmission of color by one sex alone, and the formation of a subbreed with this character, he says: "It is a singular circumstance that Mr. Darwin should have suggested the possibility of modifying the sexual colors of

On the Relation between the Period of Development of a Character and its Transmission to One Sex or to Both Sexes

Why certain characters should be inherited by both sexes, and other characters by one sex alone, namely, by that sex in which the character first appeared, is in most cases quite unknown. We cannot even conjecture why with certain subbreeds of the pigeon, black striæ, though transmitted through the female, should be developed in the male alone, while every other character is equally transferred to both sexes; why, again, with cats, the tortoise-shell color should, with rare exceptions, be developed in the female alone. The very same character, such as deficient or supernumerary digits, color-blindness, etc., may with mankind be inherited by the males alone of one family, and in another family by the females alone, though in both cases transmitted through the opposite as well as through the same sex.[1] Although we are thus ignorant, the two following rules seem often to hold good, — that variations which first appear in either sex at a late period of life tend to be developed in the same sex alone, while variations which first appear early in life in either sex tend to be developed in both sexes. I am, however, far from supposing that this is the sole determining cause. As I have not elsewhere discussed this subject, and as it has an important bearing on sexual selection, I must here enter into lengthy and somewhat intricate details.

It is in itself probable that any character appearing at an early age would tend to be inherited equally by both sexes, for the sexes do not differ much in constitution before the power of reproduction is gained. On the other hand, after this power has been gained and the sexes have come to differ in constitution, the gemmules (if I may again use the language of pangenesis) which are cast off from each varying part in the one sex would be much more likely to possess the proper affinities for uniting

birds by a course of artificial selection. When he did so he was in ignorance of these facts that I have related; but it is remarkable how very closely he suggested the right method of procedure."

[1] References are given in my Variation of Animals and Plants under Domestication, Vol. II, p. 72.

with the tissues of the same sex, and thus becoming developed, than with those of the opposite sex.

I was first led to infer that a relation of this kind exists, from the fact that whenever and in whatever manner the adult male differs from the adult female, he differs in the same manner from the young of both sexes. The generality of this fact is quite remarkable; it holds good with almost all mammals, birds, amphibians, and fishes; also with many crustaceans, spiders, and some few insects, such as certain Orthoptera and Libellulæ. In all these cases the variations, through the accumulation of which the male acquired his proper masculine characters, must have occurred at a somewhat late period of life, otherwise the young males would have been similarly characterized; and conformably with our rule, the variations are transmitted to and developed in the adult males alone. When, on the other hand, the adult male closely resembles the young of both sexes (these, with rare exceptions, being alike), he generally resembles the adult female; and in most of these cases the variations through which the young and old acquired their present characters probably occurred, according to our rule, during youth. But there is here room for doubt, for characters are sometimes transferred to the offspring at an earlier age than that at which they first appeared in the parents, so that the parents may have varied when adult, and have transferred their characters to their offspring while young. There are, moreover, many animals in which the two sexes closely resemble each other, and yet both differ from their young; and here the characters of the adults must have been acquired late in life; nevertheless, these characters, in apparent contradiction to our rule, are transferred to both sexes. We must not, however, overlook the possibility or even probability of successive variations of the same nature occurring, under exposure to similar conditions, simultaneously in both sexes at a rather late period of life; and in this case the variations would be transferred to the offspring of both sexes at a corresponding late age; and there would then be no real contradiction to the rule that variations occurring late in life are transferred exclusively to the sex in which they first appeared. This latter rule seems to hold true

more generally than the second one, namely, that variations which occur in either sex early in life tend to be transferred to both sexes. As it was obviously impossible even to estimate in how large a number of cases throughout the animal kingdom these two propositions held good, it occurred to me to investigate some striking instances, and to rely on the result.

An excellent case for investigation is afforded by the deer family. In all the species but one, the horns are developed only in the males, though certainly transmitted through the females, and capable of abnormal development in them. In the reindeer, on the other hand, the female is provided with horns; so that in this species the horns ought, according to our rule, to appear early in life, long before the two sexes are mature and have come to differ much in constitution. In all the other species the horns ought to appear later in life, which would lead to their development in that sex alone in which they first appeared in the progenitor of the whole family. Now in seven species, belonging to distinct sections of the family and inhabiting different regions, in which the stags alone bear horns, I find that the horns first appear at periods varying from nine months after birth in the roebuck to ten, twelve, or even more months in the stags of the six other and larger species.[1] But with the reindeer the case is widely different; for as I hear from Professor Nilsson, who kindly made special inquiries for me in Lapland, the horns appear in the young animals within four or five weeks after birth, and at the same time in both sexes. So that here we have a structure, developed at a most unusually early age in one species of the family, and likewise common to both sexes in this one species alone.

In several kinds of antelopes only the males are provided with horns, while in the greater number both sexes bear horns. With

[1] I am much obliged to Mr. Cupples for having made inquiries for me in regard to the roebuck and red deer of Scotland from Mr. Robertson, the experienced head forester to the Marquis of Breadalbane. In regard to fallow deer, I have to thank Mr. Eyton and others for information. For the *Cervus alces* of North America, see Land and Water, 1868, pp. 221 and 254; for the *C. Virginianus* and *strongyloceros* of the same continent, see J. D. Caton, in *Ottawa Academy of Natural Science*, 1868, p. 13. For *Cervus Eldi* of Pegu, see Lieutenant Beavan, *Proc. Zoölog. Soc.*, 1867, p. 762.

respect to the period of development, Mr. Blyth informs me that there was at one time in the Zoölogical Gardens a young koodoo (*Ant. strepsiceros*), of which the males alone are horned, and also the young of a closely allied species, the eland (*Ant. oreas*), in which both sexes are horned. Now it is in strict conformity with our rule that in the young male koodoo, although ten months old, the horns were remarkably small, considering the size ultimately attained by them; while in the young male eland, although only three months old, the horns were already very much larger than in the koodoo. It is also a noticeable fact that in the prong-horned antelope[1] only a few of the females, about one in five, have horns, and these are in a rudimentary state, though sometimes above four inches long; so that as far as concerns the possession of horns by the males alone, this species is in an intermediate condition, and the horns do not appear until about five or six months after birth. Therefore in comparison with what little we know of the development of the horns in other antelopes, and from what we do know with respect to the horns of deer, cattle, etc., those of the prong-horned antelope appear at an intermediate period of life, — that is, not very early, as in cattle and sheep, nor very late, as in the larger deer and antelopes. The horns of sheep, goats, and cattle, which are well developed in both sexes, though not quite equal in size, can be felt, or even seen, at birth or soon afterward.[2] Our rule, however, seems to fail in some breeds of sheep, for instance, merinos, in which the rams alone are horned; for I cannot find on inquiry,[3] that the horns are developed later in life in this breed than in ordinary

[1] *Antilocapra Americana.* I have to thank Dr. Canfield for information with respect to the horns of the female. See also his paper in *Proc. Zoölog. Soc.*, 1866, p. 109; also Owen's Anatomy of Vertebrates, Vol. III, p. 627.

[2] I have been assured that the horns of the sheep in North Wales can always be felt, and are sometimes even an inch in length at birth. Youatt says (Cattle, 1834, p. 277) that the prominence of the frontal bone in cattle penetrates the cutis at birth, and that the horny matter is soon formed over it.

[3] I am greatly indebted to Professor Victor Carus for having made inquiries for me, from the highest authorities, with respect to the merino sheep of Saxony. On the Guinea coast of Africa there is, however, a breed of sheep in which, as with merinos, the rams alone bear horns; and Mr. Winwood Reade informs me that in one case observed by him a young ram, born on February 10, first showed

sheep in which both sexes are horned. But with domesticated sheep the presence or absence of horns is not a firmly fixed character; for a certain proportion of the merino ewes bear small horns, and some of the rams are hornless; and in most breeds hornless ewes are occasionally produced.

Dr. W. Marshall has lately made a special study of the protuberances so common on the heads of birds,[1] and he comes to the following conclusion: that with those species in which they are confined to the males, they are developed late in life; whereas with those species in which they are common to the two sexes, they are developed at a very early period. This is certainly a striking confirmation of my two laws of inheritance.

In most of the species of the splendid family of the pheasants the males differ conspicuously from the females, and they acquire their ornaments at a rather late period of life. The eared pheasant (*Crossoptilon auritum*), however, offers a remarkable exception, for both sexes possess the fine caudal plumes, the large ear tufts, and the crimson velvet about the head; I find that all these characters appear very early in life in accordance with rule. The adult male can, however, be distinguished from the adult female by the presence of spurs; and conformably with our rule, these do not begin to be developed before the age of six months, as I am assured by Mr. Bartlett, and even at this age, the two sexes can hardly be distinguished.[2] The male and female peacock differ conspicuously from each other in almost every part of their plumage, except in the elegant head crest which is common to

horns on March 6, so that in this instance, in conformity with rule, the development of the horns occurred at a later period of life than in Welsh sheep, in which both sexes are horned.

[1] "Ueber die knöchernen Schädelhöcker der Vögel," in the *Niederländisches Archiv für Zoologie*, 1872, Band I, Heft 2.

[2] In the common peacock (*Pavo cristatus*) the male alone possesses spurs, while both sexes of the Java peacock (*P. muticus*) offer the unusual case of being furnished with spurs. Hence I fully expected that in the latter species they would have been developed earlier in life than in the common peacock; but M. Hegt of Amsterdam informs me, that with young birds of the previous year, of both species, compared on April 23, 1869, there was no difference in the development of the spurs. The spurs, however, were as yet represented merely by slight knobs or elevations. I presume that I should have been informed if any difference in the rate of development had been observed subsequently.

both sexes; and this is developed very early in life, long before the other ornaments which are confined to the male. The wild duck offers an analogous case, for the beautiful green speculum on the wings is common to both sexes, though duller and somewhat smaller in the female, and it is developed early in life, while the curled tail feathers and other ornaments of the male are developed later.[1] Between such extreme cases of close sexual resemblance and wide dissimilarity, as those of the Crossoptilon and peacock, many intermediate ones could be given, in which the characters follow our two rules in their order of development.

As most insects emerge from the pupal state in a mature condition, it is doubtful whether the period of development can determine the transference of their characters to one or to both sexes. But we do not know that the colored scales, for instance, in two species of butterflies, in one of which the sexes differ in color, while in the other they are alike, are developed at the same relative age in the cocoon. Nor do we know whether all the scales are simultaneously developed on the wings of the same species of butterfly in which certain colored marks are confined to one sex, while others are common to both sexes. A difference of this kind in the period of development is not so improbable as it may at first appear; for with the Orthoptera, which assume their adult state, not by a single metamorphosis, but by a succession of molts, the young males of some species at first resemble the females, and acquire their distinctive masculine characters only at a later molt. Strictly analogous cases occur at the successive molts of certain male crustaceans.

[1] In some other species of the duck family the speculum differs in a greater degree in the two sexes; but I have not been able to discover whether its full development occurs later in life in the males of such species than in the male of the common duck, as ought to be the case according to our rule. With the allied *Mergus cucullatus* we have, however, a case of this kind: the two sexes differ conspicuously in general plumage, and to a considerable degree in the speculum, which is pure white in the male and grayish white in the female. Now the young males at first entirely resemble the females, and have a grayish white speculum, which becomes pure white at an earlier age than that at which the adult male acquires his other and more strongly marked sexual differences. See Audubon, Ornithological Biography, 1835, Vol. III, pp. 249–250.

We have as yet considered the transference of characters, relatively to their period of development, only in species in a natural state; we will now turn to domesticated animals, and first touch on monstrosities and diseases. The presence of supernumerary digits, and the absence of certain phalanges, must be determined at an early embryonic period, — the tendency to profuse bleeding is at least congenital, as is probably color-blindness, — yet these peculiarities and other similar ones are often limited in their transmission to one sex; so that the rule that characters, developed at an early period, tend to be transmitted to both sexes here wholly fails. But this rule, as before remarked, does not appear to be nearly so general as the converse one, namely, that characters which appear late in life in one sex are transmitted exclusively to the same sex. From the fact of the above abnormal peculiarities becoming attached to one sex long before the sexual functions are active, we may infer that there must be some difference between the sexes at an extremely early age. With respect to sexually limited diseases, we know too little of the period at which they originate to draw any safe conclusion. Gout, however, seems to fall under our rule, for it is generally caused by intemperance during manhood, and is transmitted from the father to his sons in a much more marked manner than to his daughters.

In the various domestic breeds of sheep, goats, and cattle the males differ from their respective females in the shape or development of their horns, forehead, mane, dewlap, tail, and hump on the shoulders; and these peculiarities, in accordance with our rule, are not fully developed until a rather late period of life. The sexes of dogs do not differ, except that in certain breeds, especially in the Scotch deerhound, the male is much larger and heavier than the female; and, as we shall see in a future chapter, the male goes on increasing in size to an unusually late period of life, which, according to rule, will account for his increased size being transmitted to his male offspring alone. On the other hand, the tortoise-shell color, which is confined to female cats, is quite distinct at birth, and this case violates the rule. There is a breed of pigeons in which the males alone are streaked with black, and

the streaks can be detected even in the nestlings; but they become more conspicuous at each successive molt, so that this case partly opposes and partly supports the rule. With the English carrier and pouter pigeons the full development of the wattle and the crop occurs rather late in life, and conformably with the rule, these characters are transmitted in full perfection to the males alone. The following cases perhaps come within the class previously alluded to, in which both sexes have varied in the same manner at a rather late period of life, and have consequently transferred their new characters to both sexes at a corresponding late period; and if so, these cases are not opposed to our rule: there exist subbreeds of the pigeon, described by Neumeister,[1] in which both sexes change their color during two or three molts (as is likewise the case with the almond tumbler); nevertheless, these changes, though occurring rather late in life, are common to both sexes. One variety of the canary bird, namely, the London Prize, offers a nearly analogous case.

With the breeds of the fowl the inheritance of various characters by one or both sexes seems generally determined by the period at which such characters are developed. Thus in all the many breeds in which the adult male differs greatly in color from the female, as well as from the wild parent species, he differs also from the young male, so that the newly acquired characters must have appeared at a rather late period of life. On the other hand, in most of the breeds in which the two sexes resemble each other the young are colored in nearly the same manner as their parents, and this renders it probable that their colors first appeared early in life. We have instances of this fact in all black and white breeds, in which the young and old of both sexes are alike; nor can it be maintained that there is something peculiar in a black or white plumage, which leads to its transference to both sexes; for the males alone of many natural species are either black or white, the females being differently colored. With the so-called cuckoo subbreeds of the fowl, in which the feathers are transversely penciled with dark stripes, both sexes

[1] Das Ganze der Taubenzucht, 1837, Seite 21, 24. For the case of the streaked pigeons, see Dr. Chapuis, Le Pigeon Voyageur Belge, 1865, p. 87.

and the chickens are colored in nearly the same manner. The laced plumage of the Sebright bantam is the same in both sexes, and in the young chickens the wing feathers are distinctly though imperfectly laced. Spangled Hamburgs, however, offer a partial exception, for the two sexes, though not quite alike, resemble each other more closely than do the sexes of the aboriginal parent species; yet they acquire their characteristic plumage late in life, for the chickens are distinctly penciled. With respect to other characters besides color, in the wild parent species and in most of the domestic breeds, the males alone possess a well-developed comb; but in the young of the Spanish fowl it is largely developed at a very early age, and, in accordance with this early development in the male, it is of unusual size in the adult female. In the game breeds pugnacity is developed at a wonderfully early age, of which curious proofs could be given; and this character is transmitted to both sexes, so that the hens, from their extreme pugnacity, are now generally exhibited in separate pens. With the Polish breeds the bony protuberance of the skull which supports the crest is partially developed even before the chickens are hatched, and the crest itself soon begins to grow, though at first feebly;[1] and in this breed the adults of both sexes are characterized by a great bony protuberance and an immense crest.

Finally, from what we have now seen of the relation which exists in many natural species and domesticated races between the period of the development of their characters and the manner of their transmission, — for example, the striking fact of the early growth of the horns in the reindeer, in which both sexes bear horns, in comparison with their much later growth in the other species, in which the male alone bears horns, — we may conclude that one though not the sole cause of characters being exclusively inherited by one sex is their development at a late age. And secondly, that one, though apparently a less efficient, cause of

[1] For full particulars and references on all these points respecting the several breeds of the fowl, see Variation of Animals and Plants under Domestication, Vol. I, pp. 250, 256. In regard to the higher animals, the sexual differences which have arisen under domestication are described in the same work under the head of each species.

characters being inherited by both sexes is their development at an early age, while the sexes differ but little in constitution. It appears, however, that some difference must exist between the sexes, even during a very early embryonic period, for characters developed at this age not rarely become attached to one sex.

Summary and Concluding Remarks

From the foregoing discussion on the various laws of inheritance we learn that the characters of the parents often, or even generally, tend to become developed in the offspring of the same sex, at the same age, and periodically at the same season of the year in which they first appeared in the parents. But these rules, owing to unknown causes, are far from being fixed. Hence during the modification of a species the successive changes may readily be transmitted in different ways: some to one sex, and some to both; some to the offspring at one age, and some to the offspring at all ages. Not only are the laws of inheritance extremely complex, but so are the causes which induce and govern variability. The variations thus induced are preserved and accumulated by sexual selection, which is in itself an extremely complex affair, depending, as it does, on the ardor in love, the courage, and the rivalry of the males, as well as on the powers of perception, the taste, and will of the female. Sexual selection will also be largely dominated by natural selection tending toward the general welfare of the species. Hence the manner in which the individuals of either or both sexes have been affected through sexual selection cannot fail to be complex in the highest degree.

When variations occur late in life in one sex and are transmitted to the same sex at the same age, the other sex and the young are left unmodified. When they occur late in life, but are transmitted to both sexes at the same age, the young alone are left unmodified. Variations, however, may occur at any period of life in one sex or in both, and be transmitted to both sexes at all ages, and then all the individuals of the species are similarly modified. In the following chapters it will be seen that all these cases frequently occur in nature.

Sexual selection can never act on any animal before the age for reproduction arrives. From the great eagerness of the male it has generally acted on this sex and not on the females. The males have thus become provided with weapons for fighting with their rivals, with organs for discovering and securely holding the female, and for exciting or charming her. When the sexes differ in these respects it is also, as we have seen, an extremely general law that the adult male differs more or less from the young male; and we may conclude from this fact that the successive variations by which the adult male became modified did not generally occur much before the age for reproduction. Whenever some or many of the variations occurred early in life the young males would partake more or less of the characters of the adult males; and differences of this kind between the old and young males may be observed in many species of animals.

It is probable that young male animals have often tended to vary in a manner which would not only have been of no use to them at an early age, but would have been actually injurious, as by acquiring bright colors, which would render them conspicuous to their enemies, or by acquiring structures, such as great horns, which would expend much vital force in their development. Variations of this kind occurring in the young males would almost certainly be eliminated through natural selection. With the adult and experienced males, on the other hand, the advantages derived from the acquisition of such characters would more than counterbalance some exposure to danger, and some loss of vital force.

As variations which give to the male a better chance of conquering other males, or of finding, securing, or charming the opposite sex, would, if they happened to arise in the female, be of no service to her, they would not be preserved in her through sexual selection. We have also good evidence with domesticated animals that variations of all kinds are, if not carefully selected, soon lost through intercrossing and accidental deaths. Consequently in a state of nature, if variations of the above kind chanced to arise in the female line and to be transmitted exclusively in this line, they would be extremely liable to be lost. If, however, the females varied and transmitted their newly acquired

characters to their offspring of both sexes, the characters which were advantageous to the males would be preserved by them through sexual selection, and the two sexes would in consequence be modified in the same manner, although such characters were of no use to the females; but I shall hereafter have to recur to these more intricate contingencies. Lastly, the females may acquire, and apparently have often acquired by transference, characters from the male sex.

As variations occurring late in life and transmitted to one sex alone have incessantly been taken advantage of and accumulated through sexual selection in relation to the reproduction of the species, therefore it appears, at first sight, an unaccountable fact that similar variations have not frequently been accumulated through natural selection, in relation to the ordinary habits of life. If this had occurred, the two sexes would often have been differently modified, for the sake, for instance, of capturing prey or of escaping from danger. Differences of this kind between the two sexes do occasionally occur, especially in the lower classes. But this implies that the two sexes follow different habits in their struggles for existence, which is a rare circumstance with the higher animals. The case, however, is widely different with the reproductive functions, in which respect the sexes necessarily differ. For variations in structure which are related to these functions have often proved of value to one sex, and from having arisen at a late period of life have been transmitted to one sex alone; and such variations, thus preserved and transmitted, have given rise to secondary sexual characters.

In the following chapters I shall treat of the secondary sexual characters in animals of all classes. The lowest classes will detain us for a very short time, but the higher animals, especially birds, must be treated at considerable length. I intend to give only a few illustrative instances of the innumerable structures by the aid of which the male finds the female, or, when found, holds her. On the other hand, all structures and instincts by the aid of which the male conquers other males, and by which he allures or excites the female, will be fully discussed, as these are in many ways the most interesting.

Secondary Sexual Characters of Man

With mankind the differences between the sexes are greater than in most of the Quadrumana, but not so great as in some, for instance, the mandrill. Man on an average is considerably taller, heavier, and stronger than woman, with squarer shoulders and more plainly pronounced muscles. Owing to the relation which exists between muscular development and the projection of the brows,[1] the superciliary ridge is generally more marked in man than in woman. His body, and especially his face, is more hairy, and his voice has a different and more powerful tone. In certain races the women are said to differ slightly in tint from the men. For instance, Schweinfurth, in speaking of a negress belonging to the Mombuttus, who inhabit the interior of Africa, a few degrees north of the equator, says, "Like all her race, she had a skin several shades lighter than her husband's, being something of the color of half-roasted coffee."[2] As the women labor in the fields and are quite unclothed, it is not likely that they differ in color from the men owing to less exposure to the weather. European women are perhaps the brighter colored of the two sexes, as may be seen when both have been equally exposed.

Man is more courageous, pugnacious, and energetic than woman, and has a more inventive genius. His brain is absolutely larger, but whether or not proportionately to his larger body has not, I believe, been fully ascertained. In woman the face is rounder; the jaws and the base of the skull smaller; the outlines of the body rounder, in parts more prominent; and her pelvis is broader than in man;[3] but this latter character may perhaps be considered rather as a primary than a secondary sexual character. She comes to maturity at an earlier age than man.

[1] Schaaffhausen, translation in *Anthropological Review*, October, 1868, pp. 419, 420, 427.

[2] The Heart of Africa, English translation, 1873, Vol. I, p. 544.

[3] Ecker, translation in *Anthropological Review*, October, 1868, pp. 351–356. The comparison of the form of the skull in men and women has been followed out with much care by Welcker.

As with animals of all classes, so with man, the distinctive characters of the male sex are not fully developed until he is nearly mature; and if emasculated they never appear. The beard, for instance, is a secondary sexual character, and male children are beardless, though at an early age they have abundant hair on the head. It is probably due to the rather late appearance in life of the successive variations whereby man has acquired his masculine characters that they are transmitted to the male sex alone. Male and female children resemble each other closely, like the young of so many other animals in which the adult sexes differ widely; they likewise resemble the mature female much more closely than the mature male. The female, however, ultimately assumes certain distinctive characters, and in the formation of her skull is said to be intermediate between the child and the man.[1] Again, as the young of closely allied though distinct species do not differ nearly so much from each other as do the adults, so it is with the children of the different races of man. Some have even maintained that race differences cannot be detected in the infantile skull.[2] In regard to color, the newborn negro child is reddish nut-brown, which soon becomes slaty gray, the black color being fully developed within a year in the Sudan, but not until three years in Egypt. The eyes of the negro are at first blue, and the hair chestnut brown rather than black, being curled only at the ends. The children of the Australians immediately after birth are yellowish brown, and become dark at a later age. Those of the Guaranys of Paraguay are whitish yellow, but they acquire in the course of a few weeks the yellowish brown tint of their parents. Similar observations have been made in other parts of America.[3]

[1] Ecker and Welcker, translation in *Anthropological Review*, October, 1863, pp. 352, 355; Vogt, Lectures on Man, English translation, p. 81.

[2] Schaaffhausen, *Anthropological Review*, October, 1868, p. 429.

[3] Praner-Bey, on negro infants, as quoted by Vogt, Lectures on Man, English translation, 1864, p. 189; for further facts on negro infants, as quoted from Winterbottom and Camper, see Lawrence, Lectures on Physiology, etc., 1822, p. 451. For the infants of the Guaranys, see Rengger, Säugethiere, etc., s. 3. See also Godron, De l'Espèce, 1859, Tome II, p. 253. For the Australians, Waitz, Introduction to Anthropology, English translation, 1863, p. 99.

I have specified the foregoing differences between the male and female sex in mankind because they are curiously like those of the Quadrumana. With these animals the female is mature at an earlier age than the male; at least this is certainly the case in the *Cebus azarae*.[1] The males of most species are larger and stronger than the females, of which fact the gorilla affords a well-known instance. Even in so trifling a character as the greater prominence of the superciliary ridge, the males of certain monkeys differ from the females, and agree in this respect with mankind. In the gorilla and certain other monkeys the cranium of the adult male presents a strongly marked sagittal crest, which is absent in the female;[2] and Ecker found a trace of a similar difference between the two sexes in the Australians.[3] With monkeys when there is any difference in the voice, that of the male is the more powerful. We have seen that certain male monkeys have a well-developed beard, which is quite deficient, or much less developed, in the female. No instance is known of the beard, whiskers, or mustache being larger in the female than in the male monkey. Even in the color of the beard there is a curious parallelism between man and the Quadrumana, for with man when the beard differs in color from the hair of the head, as is commonly the case, it is, I believe, almost always of a lighter tint, being often reddish. I have repeatedly observed this fact in England; but two gentlemen have lately written to me, saying that they form an exception to the rule. One of these gentlemen accounts for the fact by the wide difference in color of the hair on the paternal and maternal sides of his family. Both had been long aware of this peculiarity (one of them having often been accused of dyeing his beard) and had been thus led to observe other men, and were convinced that the exceptions were very rare. Dr. Hooker attended to this little point for me in Russia, and found no exception to the rule. In Calcutta Mr. J. Scott, of the Botanic

[1] Rengger, Säugethiere, etc., 1830, s. 49.

[2] As in *Macacus cynomolgus* (Desmarest, Mammalogie, p. 65), and in *Hylobates agilis* (Geoffroy St.-Hilaire and F. Cuvier, Hist. Nat. des Mamm., 1824, Tome I, p. 2).

[3] *Anthropological Review*, October, 1868, p. 353.

Gardens, was so kind as to observe the many races of men to be seen there, as well as in some other parts of India, namely, two races in Sikhim, the Bhoteas, Hindus, Burmese, and Chinese, most of which races have very little hair on the face, and he always found that when there was any difference in color between the hair of the head and the beard, the latter was invariably lighter. Now with monkeys, as has already been stated, the beard frequently differs strikingly in color from the hair of the head, and in such cases it is always of a lighter hue, being often pure white, sometimes yellow or reddish.[1]

In regard to the general hairiness of the body, the women in all races are less hairy than the men, and in some few Quadrumana the under side of the body of the female is less hairy than that of the male.[2] Lastly, male monkeys, like men, are bolder and fiercer than the females. They lead the troop, and when there is danger come to the front. We thus see how close is the parallelism between the sexual differences of man and the Quadrumana. With some few species, however, as with certain baboons, the orang, and the gorilla, there is a considerably greater difference between the sexes, as in the size of the canine teeth, in the development and color of the hair, and especially in the color of the naked parts of the skin, than in mankind.

All the secondary sexual characters of man are highly variable, even within the limits of the same race; and they differ much in the several races. These two rules hold good generally throughout the animal kingdom. In the excellent observations made on

[1] Mr. Blyth informs me that he has only seen one instance of the beard, whiskers, etc., in a monkey becoming white with old age, as is so commonly the case with us. This, however, occurred in an aged *Macacus cynomolgus*, kept in confinement, whose mustaches were "remarkably long and humanlike." Altogether this old monkey presented a ludicrous resemblance to one of the reigning monarchs of Europe, after whom he was universally nicknamed. In certain races of man the hair on the head hardly ever becomes gray; thus Mr. D. Forbes has never, as he informs me, seen an instance with the Aymaras and Quichuas of South America.

[2] This is the case with the females of several species of Hylobates; see Geoffroy St.-Hilaire and F. Cuvier, Hist. Nat. des Mamm., Tome I. See also on *H. lar*, Penny Cyclopedia, Vol. II, pp. 149, 150.

board the *Novara*,[1] the male Australians were found to exceed the females by only sixty-five millimeters in height, while with the Javans the average excess was two hundred and eighteen millimeters; so that in this latter race the difference in height between the sexes is more than thrice as great as with the Australians. Numerous measurements were carefully made of the stature, the circumference of the neck and chest, the length of the backbone and of the arms in various races, and nearly all these measurements show that the males differ much more from one another than do the females. This fact indicates that, as far as these characters are concerned, it is the male which has been chiefly modified, since the several races diverged from their common stock.

The development of the beard and the hairiness of the body differ remarkably in the men of distinct races, and even in different tribes or families of the same race. We Europeans see this among ourselves. In the Island of St. Kilda, according to Martin,[2] the men do not acquire beards until the age of thirty or upward, and even then the beards are very thin. On the Europæo-Asiatic continent beards prevail until we pass beyond India, though with the natives of Ceylon they are often absent, as was noticed in ancient times by Diodorus.[3] Eastward of India beards disappear, as with the Siamese, Malays, Kalmucks, Chinese, and Japanese; nevertheless the Ainos,[4] who inhabit the northernmost islands of the Japan Archipelago, are the hairiest men in the world. With negroes the beard is scanty or wanting, and they rarely have whiskers; in both sexes the body is frequently almost destitute of fine down.[5] On the other hand, the Papuans of the Malay Archipelago, who are nearly as black as negroes, possess

[1] The results were deduced by Dr. Weisbach from the measurements made by Drs. K. Scherzer and Schwarz. See Reise der Novara: "Anthropolog. Theil," 1867, ss. 216, 231, 234, 236, 239, 269.

[2] Voyage to St. Kilda, 3d ed., 1753, p. 37.

[3] Sir J. E. Tennent, Ceylon, 1859, Vol. II, p. 107.

[4] Quatrefages, *Revue des Cours Scientifiques*, August 29, 1868, p. 630; Vogt, Lectures on Man, English translation, p. 127.

[5] On the beards of negroes, see Vogt, Lectures, etc., p. 127. Waitz, Introduction to Anthropology, English translation, 1863, Vol. I, p. 96. It is remarkable that in the United States (Investigations in Military and Anthropological Statistics of

well-developed beards. In the Pacific Ocean the inhabitants of the Fiji Archipelago have large bushy beards, while those of the not distant archipelagoes of Tonga and Samoa are beardless; but these men belong to distinct races. In the Ellice group all the inhabitants belong to the same race; yet on one island alone, namely, Nunemaya, "the men have splendid beards," while on the other islands "they have, as a rule, a dozen straggling hairs for a beard."[1]

Throughout the great American continent the men may be said to be beardless; but in almost all the tribes a few short hairs are apt to be on the face, especially in old age. With the tribes of North America, Catlin estimates that eighteen out of twenty men are completely destitute by nature of a beard; but occasionally there may be seen a man, who has neglected to pluck out the hairs at puberty, with a soft beard an inch or two in length. The Guaranys of Paraguay differ from all the surrounding tribes in having a small beard, and even some hair on the body, but no whiskers.[2] I am informed by Mr. D. Forbes, who particularly attended to this point, that the Aymaras and Quichuas of the Cordillera are remarkably hairless, yet in old age a few straggling hairs occasionally appear on the chin. The men of these two tribes have very little hair on the various parts of the body where hair grows abundantly in Europeans, and the women have none on the corresponding parts. The hair on the head, however, attains an extraordinary length in both sexes, often reaching almost to the ground; and this is likewise the case with some of the North American tribes. In the amount of hair and in the general shape of the body the sexes of the American aborigines do not differ so much from each other as in most other races.[3] This fact is analogous with what occurs with some

American Soldiers, 1869, p. 569) the pure negroes and their crossed offspring seem to have bodies almost as hairy as Europeans.

[1] Dr. J. Barnard Davis, "On Oceanic Races," in *Anthropological Review*, April, 1870, pp. 185, 191.

[2] Catlin, North American Indians, 3d ed., 1842, Vol. II, p. 227. On the Guaranys, see Azara, Voyages dans l'Amérique Mérid., 1809, Tome II, p. 58; also Rengger, Säugethiere von Paraguay, s. 3.

[3] Professor and Mrs. Agassiz (Journey in Brazil, p. 530) remark that the sexes of the American Indians differ less than those of the negroes and of the higher races. See also Rengger, *ibid.*, p. 3, on the Guaranys.

closely allied monkeys; thus the sexes of the chimpanzee are not as different as those of the orang or gorilla.[1]

In the previous chapters we have seen that with mammals, birds, fishes, insects, etc., many characters, which there is every reason to believe were primarily gained through sexual selection by one sex, have been transferred to the other. As this same form of transmission has apparently prevailed much with mankind, it will save useless repetition if we discuss the origin of characters peculiar to the male sex together with certain other characters common to both sexes.

Law of Battle

With savages, for instance, the Australians, the women are the constant cause of war both between members of the same tribe and between distinct tribes. So no doubt it was in ancient times; "nam fuit ante Helenam mulier teterrima belli causa." With some of the North American Indians, the contest is reduced to a system. That excellent observer, Hearne,[2] says: "It has ever been the custom among these people for the men to wrestle for any woman to whom they are attached; and, of course, the strongest party always carries off the prize. A weak man, unless he be a good hunter, and well beloved, is seldom permitted to keep a wife that a stronger man thinks worth his notice. This custom prevails throughout all the tribes, and causes a great spirit of emulation among their youth, who are upon all occasions, from their childhood, trying their strength and skill in wrestling." With the Guanas of South America, Azara states that the men rarely marry till twenty years old or more, as before that age they cannot conquer their rivals.

Other similar facts could be given; but even if we had no evidence on this head, we might feel almost sure, from the

[1] Rütimeyer, Die Grenzen der Thierwelt; eine Betrachtung zu Darwin's Lehre, 1868, s. 54.

[2] A Journey from Prince of Wales Fort, 8vo, edit. Dublin, 1796, p. 104. Sir J. Lubbock (Origin of Civilization, 1870, p. 69) gives other and similar cases in North America. For the Guanas of South America, see Azara, Voyages etc., Tome II, p. 94.

analogy of the higher Quadrumana,[1] that the law of battle had prevailed with man during the early stages of his development. The occasional appearance at the present day of canine teeth which project above the others, with traces of a diastema, or open space for the reception of the opposite canines, is in all probability a case of reversion to a former state, when the progenitors of man were provided with these weapons, like so many existing male Quadrumana. It was remarked in a former chapter that as man gradually became erect, and continually used his hands and arms for fighting with sticks and stones, as well as for the other purposes of life, he would have used his jaws and teeth less and less. The jaws, together with their muscles, would then have been reduced through disuse, as would the teeth through the not well-understood principles of correlation and economy of growth; for we everywhere see that parts, which are no longer of service, are reduced in size. By such steps the original inequality between the jaws and teeth in the two sexes of mankind would ultimately have been obliterated. The case is almost parallel with that of many male Ruminants, in which the canine teeth have been reduced to mere rudiments, or have disappeared, apparently in consequence of the development of horns. As the prodigious difference between the skulls of the two sexes in the orang and gorilla stands in close relation with the development of the immense canine teeth in the males, we may infer that the reduction of the jaws and teeth in the early male progenitors of man must have led to a most striking and favorable change in his appearance.

There can be little doubt that the greater size and strength of man, in comparison with woman, together with his broader shoulders, more developed muscles, rugged outline of body, his greater courage and pugnacity, are all due in chief part to inheritance from his half-human male ancestors. These characters would, however, have been preserved, or even augmented during the long ages of man's savagery, by the success of the strongest

[1] On the fighting of the male gorillas, see Dr. Savage, in *Boston Journal of Natural History*, 1847, Vol. V, p. 423. On *Presbytis entellus*, see the Indian Field, 1859, p. 146.

and boldest men, both in the general struggle for life and in their contests for wives, a success which would have insured their leaving a more numerous progeny than their less favored brethren. It is not probable that the greater strength of man was primarily acquired through the inherited effects of his having worked harder than woman for his own subsistence and that of his family; for the women in all barbarous nations are compelled to work at least as hard as the men. With civilized people the arbitrament of battle for the possession of the women has long ceased; on the other hand, the men, as a general rule, have to work harder than the women for their joint subsistence, and thus their greater strength will have been kept up.

Difference in the Mental Powers of the Two Sexes

With respect to differences of this nature between man and woman, it is probable that sexual selection has played a highly important part. I am aware that some writers doubt whether there is any such inherent difference; but this is at least probable from the analogy of the lower animals which present other secondary sexual characters. No one disputes that the bull differs in disposition from the cow, the wild boar from the sow, the stallion from the mare, and, as is well known to the keepers of menageries, the males of the larger apes from the females. Woman seems to differ from man in mental disposition, chiefly in her greater tenderness and less selfishness; and this holds good even with savages, as shown by a well-known passage in Mungo Park's Travels, and by statements made by many other travelers. Woman, owing to her maternal instincts, displays these qualities towards her infants in an eminent degree; therefore it is likely that she would often extend them towards her fellow-creatures. Man is the rival of other men; he delights in competition, and this leads to ambition, which passes too easily into selfishness. These latter qualities seem to be his natural and unfortunate birthright. It is generally admitted that with woman the powers of intuition, of rapid perception, and perhaps of imitation are more strongly marked than in man; but some,

at least, of these faculties are characteristic of the lower races, and therefore of a past and lower state of civilization.

The chief distinction in the intellectual powers of the two sexes is shown by man's attaining to a higher eminence, in whatever he takes up, than can woman — whether requiring deep thought, reason, or imagination, or merely the use of the senses and hands. If two lists were made of the most eminent men and women in poetry, painting, sculpture, music (inclusive both of composition and performance), history, science, and philosophy, with half a dozen names under each subject, the two lists would not bear comparison. We may also infer, from the law of the deviation from averages, so well illustrated by Mr. Galton, in his work on Hereditary Genius, that if men are capable of a decided preëminence over women in many subjects, the average of mental power in man must be above that of woman.

Among the half-human progenitors of man, and among savages, there have been struggles between the males during many generations for the possession of the females. But mere bodily strength and size would do little for victory, unless associated with courage, perseverance, and determined energy. With social animals, the young males have to pass through many a contest before they win a female, and the older males have to retain their females by renewed battles. They have, also, as in the case of mankind, to defend their females, as well as their young, from enemies of all kinds, and to hunt for their joint subsistence. But to avoid enemies or to attack them with success, to capture wild animals, and to fashion weapons require the aid of the higher mental faculties, namely, observation, reason, invention, or imagination. These various faculties will thus have been continually put to the test and selected during manhood; they will, moreover, have been strengthened by use during this same period of life. Consequently, in accordance with the principle often alluded to, we might expect that they would at least tend to be transmitted chiefly to the male offspring at the corresponding period of manhood.

Now when two men are put into competition, or a man with a woman, both possessed of every mental quality in equal perfection, save that one has higher energy, perseverance, and

courage, the latter will generally become more eminent in every pursuit, and will gain the ascendancy.[1] He may be said to possess genius, for genius has been declared by a great authority to be patience; and patience, in this sense, means unflinching, undaunted perseverance. But this view of genius is perhaps deficient; for without the higher powers of the imagination and reason, no eminent success can be gained in many subjects. These latter faculties, as well as the former, will have been developed in man, partly through sexual selection, — that is, through the contest of rival males, and partly through natural selection, — that is, from success in the general struggle for life; and as in both cases the struggle will have been during maturity, the characters gained will have been transmitted more fully to the male than to the female offspring. It accords in a striking manner with this view of the modification and reënforcement of many of our mental faculties by sexual selection, that, firstly, they notoriously undergo a considerable change at puberty,[2] and, secondly, that eunuchs remain throughout life inferior in these same qualities. Thus man has ultimately become superior to woman. It is, indeed, fortunate that the law of the equal transmission of characters to both sexes prevails with mammals; otherwise it is probable that man would have become as superior in mental endowment to woman as the peacock is in ornamental plumage to the peahen.

It must be borne in mind that the tendency in characters acquired by either sex late in life to be transmitted to the same sex at the same age, and of early acquired characters to be transmitted to both sexes, are rules which, though general, do not always hold. If they always held good, we might conclude (but I here exceed my proper bounds) that the inherited effects of the early education of boys and girls would be transmitted equally to both sexes, so that the present inequality in mental power

[1] J. Stuart Mill remarks (The Subjection of Women, 1869, p. 122), "The things in which man most excels woman are those which require most plodding, and long hammering at single thoughts." What is this but energy and perseverance?

[2] Maudsley, Mind and Body, p. 31.

between the sexes would not be effaced by a similar course of early training; nor can it have been caused by their dissimilar early training. In order that woman should reach the same standard as man, she ought, when nearly adult, to be trained to energy and perseverance, and to have her reason and imagination exercised to the highest point; and then she would probably transmit these qualities chiefly to her adult daughters. All women, however, could not be thus raised, unless during many generations those who excelled in the above robust virtues were married, and produced offspring in larger numbers than other women. As before remarked of bodily strength, although men do not now fight for their wives, and this form of selection has passed away, yet during manhood they generally undergo a severe struggle in order to maintain themselves and their families; and this will tend to keep up or even increase their mental powers, and, as a consequence, the present inequality between the sexes.[1]

Voice and Musical Powers

In some species of Quadrumana there is a great difference between the adult sexes, — in the power of their voices and in the development of the vocal organs; and man appears to have inherited this difference from his early progenitors. His vocal cords are about one third longer than in woman, or than in boys; and emasculation produces the same effect on him as on the lower animals, for it "arrests that prominent growth of the thyroid, etc., which accompanies the elongation of the cords."[2] With respect to the cause of this difference between the sexes, I have nothing to add to the remarks in the last chapter on the probable effects of the long-continued use of the vocal organs by the male

[1] An observation by Vogt bears on this subject. He says, "It is a remarkable circumstance that the difference between the sexes, as regards the cranial cavity, increases with the development of the race, so that the male European excels much more the female than the negro the negress. Welcker confirms this statement of Huschke from his measurements of negro and German skulls." But Vogt admits (Lectures on Man, English translation, 1864, p. 81) that more observations are requisite on this point.

[2] Owen, Anatomy of Vertebrates, Vol. III, p. 603.

under the excitement of love, rage, and jealousy. According to Sir Duncan Gibb,[1] the voice and the form of the larynx differ in the different races of mankind; but with the Tartars, Chinese, etc., the voice of the male is said not to differ so much from that of the female as in most other races.

The capacity and love for singing or music, though not a sexual character in man, must not here be passed over. Although the sounds emitted by animals of all kinds serve many purposes, a strong case can be made out, that the vocal organs were primarily used and perfected in relation to the propagation of the species. Insects and some few spiders are the lowest animals which voluntarily produce any sound; and this is generally effected by the aid of beautifully constructed stridulating organs, which are often confined to the males. The sounds thus produced consist, I believe in all cases, of the same note repeated rhythmically;[2] and this is sometimes pleasing even to the ears of man. The chief and, in some cases, exclusive purpose appears to be either to call or charm the opposite sex.

The sounds produced by fishes are said in some cases to be made only by the males during the breeding season. All the air-breathing Vertebrata necessarily possess an apparatus for inhaling and expelling air, with a pipe capable of being closed at one end. Hence when the primeval members of this class were strongly excited and their muscles violently contracted, purposeless sounds would almost certainly have been produced; and these, if they proved in any way serviceable, might readily have been modified or intensified by the preservation of properly adapted variations. The lowest Vertebrates which breathe air are Amphibians; and of these, frogs and toads possess vocal organs, which are incessantly used during the breeding season, and which are more often highly developed in the male than in the female. The male alone of the tortoise utters a noise, and this only during the season of love. Male alligators roar or bellow during the same season. Every one knows how much birds

[1] *Journal of the Anthropological Society*, April, 1869, pp. lvii, lxvi.

[2] Dr. Scudder, "Notes on Stridulation," in *Proceedings Boston Society of Natural History*, April, 1868, Vol. XI.

use their vocal organs as a means of courtship; and some species likewise perform what may be called instrumental music.

In the class of mammals, with which we are here more particularly concerned, the males of almost all the species use their voices during the breeding season much more than at any other time; and some are absolutely mute excepting at this season. With other species both sexes, or only the females, use their voices as a love call. Considering these facts, and that the vocal organs of some quadrupeds are much more largely developed in the male than in the female, either permanently or temporarily during the breeding season; and considering that in most of the lower classes the sounds produced by the males serve not only to call but to excite or allure the female,—it is a surprising fact that we have not as yet any good evidence that these organs are used by male mammals to charm the females. The American *Mycetes caraya* perhaps forms an exception, as does the *Hylobates agilis*, an ape allied to man. This gibbon has an extremely loud but musical voice. Mr. Waterhouse states:[1] "It appeared to me that in ascending and descending the scale the intervals were always exactly half-tones; and I am sure that the highest note was the exact octave to the lowest. The quality of the notes is very musical; and I do not doubt that a good violinist would be able to give a correct idea of the gibbon's composition, excepting as regards its loudness." Mr. Waterhouse then gives the notes. Professor Owen, who is a musician, confirms the foregoing statement, and remarks, though erroneously, that this gibbon "alone of brute mammals may be said to sing." It appears to be much excited after its performance. Unfortunately, its habits have never been closely observed in a state of nature; but from the analogy of other animals, it is probable that it uses its musical powers more especially during the season of courtship.

This gibbon is not the only species in the genus which sings, for my son, Francis Darwin, attentively listened in the Zoölogical Gardens to *H. leuciscus* while singing a cadence of three notes,

[1] Given in W. C. L. Martin's General Introduction to Natural History of Mammalian Animals, 1841, p. 432; Owen, Anatomy of Vertebrates, Vol. III, p. 600.

in true musical intervals and with a clear musical tone. It is a more surprising fact that certain rodents utter musical sounds. Singing mice have often been mentioned and exhibited, but imposture has commonly been suspected. We have, however, at last a clear account by a well-known observer, the Rev. S. Lockwood,[1] of the musical powers of an American species, the *Hesperomys cognatus*, belonging to a genus distinct from that of the English mouse. This little animal was kept in confinement, and the performance was repeatedly heard. In one of the two chief songs, "the last bar would frequently be prolonged to two or three; and she would sometimes change from C sharp and D to C natural and D, then warble on these two notes awhile, and wind up with a quick chirp on C sharp and D. The distinctness between the semitones was very marked, and easily appreciable to a good ear." Mr. Lockwood gives both songs in musical notation, and adds that though this little mouse "had no ear for time, yet she would keep to the key of B (two flats) and strictly in a major key. . . . Her soft clear voice falls an octave with all the precision possible; then at the wind up it rises again into a very quick trill on C sharp and D."

A critic has asked how the ears of man, and he ought to have added of other animals, could have been adapted by selection so as to distinguish musical notes. But this question shows some confusion on the subject; a noise is the sensation resulting from the coexistence of several aërial "simple vibrations" of various periods, each of which intermits so frequently that its separate existence cannot be perceived. It is only in the want of continuity of such vibrations, and in their want of harmony *inter se*, that a noise differs from a musical note. Thus an ear to be capable of discriminating noises — and the high importance of this power to all animals is admitted by every one — must be sensitive to musical notes. We have evidence of this capacity even low down in the animal scale; thus Crustaceans are provided with auditory hairs of different lengths, which have been seen to vibrate when the proper musical notes are struck.[2] As stated in a previous

[1] The *American Naturalist*, 1871, p. 761.

[2] Helmholtz, Théorie Phys. de la Musique, 1868, p. 187.

chapter, similar observations have been made on the hairs of the antennæ of gnats. It has been positively asserted by good observers that spiders are attracted by music. It is also well known that some dogs howl when hearing particular tones.[1] Seals apparently appreciate music, and their fondness for it "was well known to the ancients, and is often taken advantage of by the hunters at the present day." [2]

Therefore, as far as the mere perception of musical notes is concerned, there seems no special difficulty in the case of man or of any other animal. Helmholtz has explained on physiological principles why concords are agreeable, and discords disagreeable, to the human ear; but we are little concerned with these, as music in harmony is a late invention. We are more concerned with melody, and here again, according to Helmholtz, it is intelligible why the notes of our musical scale are used. The ear analyzes all sounds into their component "simple vibrations," although we are not conscious of this analysis. In a musical note the lowest in pitch of these is generally predominant, and the others, which are less marked, are the octave, the twelfth, the second octave, etc., all harmonies of the fundamental predominant note; any two notes of our scale have many of these harmonic overtones in common. It seems pretty clear, then, that if an animal always wished to sing precisely the same song, he would guide himself by sounding those notes in succession which possess many overtones in common, — that is, he would choose for his song notes which belong to our musical scale.

But if it be further asked why musical tones in a certain order and rhythm give man and other animals pleasure, we can no more give the reason than for the pleasantness of certain tastes and smells. That they do give pleasure of some kind to animals we may infer from their being produced during the season of courtship by many insects, spiders, fishes, amphibians, and birds;

[1] Several accounts have been published to this effect. Mr. Peach writes to me that he has repeatedly found that an old dog of his howls when B flat is sounded on the flute, and to no other note. I may add another instance of a dog always whining when one note on a concertina, which was out of tune, was played.

[2] Mr. R. Brown, in *Proceedings Zoölogical Society*, 1868, p. 10.

for unless the females were able to appreciate such sounds and were excited or charmed by them, the persevering efforts of the males, and the complex structures often possessed by them alone, would be useless; and this it is impossible to believe.

Human song is generally admitted to be the basis or origin of instrumental music. As neither the enjoyment nor the capacity of producing musical notes are faculties of the least use to man in reference to his daily habits of life, they must be ranked among the most mysterious with which he is endowed. They are present, though in a very rude condition, in men of all races, even the most savage; but so different is the taste of the several races that our music gives no pleasure to savages, and their music is to us in most cases hideous and unmeaning. Dr. Seemann, in some interesting remarks on this subject,[1] "doubts whether even among the nations of Western Europe, intimately connected as they are by close and frequent intercourse, the music of the one is interpreted in the same sense by the others. By traveling eastward we find that there is certainly a different language of music. Songs of joy and dance accompaniments are no longer as, with us, in the major keys, but always in the minor." Whether or not the half-human progenitors of man possessed, like the singing gibbons, the capacity of producing, and therefore no doubt of appreciating, musical notes, we know that man possessed these faculties at a very remote period. M. Lartet described two flutes, made out of the bones and horns of the reindeer, found in caves together with flint tools and the remains of extinct animals. The arts of singing and of dancing are also very ancient, and are now practiced by all or nearly all the lowest races of man. Poetry, which may be considered as the offspring of song, is likewise so ancient that many persons have felt astonished that it should have arisen during the earliest ages of which we have any record.

We see that the musical faculties, which are not wholly deficient in any race, are capable of prompt and high development,

[1] *Journal of Anthropological Society*, October, 1870, p. clv. See also the several later chapters in Sir John Lubbock's Prehistoric Times, 2d ed., 1869, which contain an admirable account of the habits of savages.

for Hottentots and negroes have become excellent musicians, although in their native countries they rarely practice anything that we should consider music. Schweinfurth, however, was pleased with some of the simple melodies which he heard in the interior of Africa. But there is nothing anomalous in the musical faculties lying dormant in man; some species of birds, which never naturally sing, can without much difficulty be taught to do so: thus a house sparrow has learnt the song of a linnet. As these two species are closely allied and belong to the order of Insessores, which includes nearly all the singing-birds in the world, it is possible that a progenitor of the sparrow may have been a songster. It is more remarkable that parrots, belonging to a group distinct from the Insessores, and having differently constructed vocal organs, can be taught not only to speak but to pipe or whistle tunes invented by man, so that they must have some musical capacity. Nevertheless, it would be very rash to assume that parrots are descended from some ancient form which was a songster. Many cases could be advanced of organs and instincts originally adapted for one purpose, having been utilized for some distinct purpose.[1] Hence the capacity for high musical development, which the savage races of man possess, may be due either to the practice by our semihuman progenitors of some rude form of music, or simply to their having acquired the proper vocal organs for a different purpose. But in this latter case we must assume, as in the above instance of parrots, and as seems to occur with many animals, that they already possessed some sense of melody.

Music arouses in us various emotions, but not the more terrible ones of horror, fear, rage, etc. It awakens the gentler feelings of tenderness and love, which readily pass into devotion. In the

[1] Since this chapter was printed, I have seen a valuable article by Mr. Chauncey Wright (*North American Review*, October, 1870, p. 293), who, in discussing the above subject, remarks, "There are many consequences of the ultimate laws or uniformities of nature, through which the acquisition of one useful power will bring with it many resulting advantages as well as limiting disadvantages, actual or possible, which the principle of utility may not have comprehended in its action."

Chinese annals it is said, "Music hath the power of making heaven descend upon earth." It likewise stirs up in us the sense of triumph and the glorious ardor for war. These powerful and mingled feelings may well give rise to the sense of sublimity. We can concentrate, as Dr. Seemann observes, greater intensity of feeling in a single musical note than in pages of writing. It is probable that nearly the same emotions, but much weaker and far less complex, are felt by birds when the male pours forth his full volume of song, in rivalry with other males, to captivate the female. Love is still the commonest theme of our songs. As Herbert Spencer remarks, "Music arouses dormant sentiments of which we had not conceived the possibility, and do not know the meaning; or, as Richter says, tells us of things we have not seen and shall not see." Conversely, when vivid emotions are felt and expressed by the orator, or even in common speech, musical cadences and rhythm are instinctively used. The negro in Africa when excited often bursts forth in song; "another will reply in song, while the company, as if touched by a musical wave, murmur a chorus in perfect unison."[1] Even monkeys express strong feelings in different tones, — anger and impatience by low, fear and pain by high, notes.[2] The sensations and ideas thus excited in us by music, or expressed by the cadences of oratory, appear from their vagueness, yet depth, like mental reversions to the emotions and thoughts of a long-past age.

All these facts with respect to music and impassioned speech become intelligible to a certain extent, if we may assume that musical tones and rhythm were used by our half-human ancestors during the season of courtship, when animals of all kinds are excited not only by love but by the strong passions of jealousy, rivalry, and triumph. From the deeply laid principle of inherited associations, musical tones in this case would be likely to call up vaguely and indefinitely the strong emotions of a long-past age. As we have every reason to suppose that articulate speech is one

[1] Winwood Reade, The Martyrdom of Man, 1872, p. 441, and African Sketch Book, 1873, Vol. II, p. 313.

[2] Rengger, Säugethiere von Paraguay, s. 49.

of the latest, as it certainly is the highest, of the arts acquired by man, and as the instinctive power of producing musical notes and rhythms is developed low down in the animal series, it would be altogether opposed to the principle of evolution, if we were to admit that man's musical capacity has been developed from the tones used in impassioned speech. We must suppose that the rhythms and cadences of oratory are derived from previously developed musical powers.[1] We can thus understand how it is that music, dancing, song, and poetry are such very ancient arts. We may go even further than this, and, as remarked in a former chapter, believe that musical sounds afforded one of the bases for the development of language.[2]

As the males of several quadrumanous animals have their vocal organs much more developed than in the females, and as a gibbon, one of the anthropomorphous apes, pours forth a whole octave of musical notes and may be said to sing, it appears probable that the progenitors of man, either the males or females or both sexes, before acquiring the power of expressing their mutual love in articulate language, endeavored to charm each other with musical notes and rhythm. So little is known about the use of the voice by the Quadrumana during the season of love that we have no means of judging whether the habit of singing was first acquired by our male or female ancestors.

[1] See the very interesting discussion on the "Origin and Function of Music," by Herbert Spencer, in his collected Essays, 1858, p. 359. Mr. Spencer comes to an exactly opposite conclusion to that at which I have arrived. He concludes, as did Diderot formerly, that the cadences used in emotional speech afford the foundation from which music has been developed; while I conclude that musical notes and rhythm were first acquired by the male or female progenitors of mankind for the sake of charming the opposite sex. Thus musical tones became firmly associated with some of the strongest passions an animal is capable of feeling, and are consequently used instinctively, or through association, when strong emotions are expressed in speech. Mr. Spencer does not offer any satisfactory explanation, nor can I, why high or deep notes should be expressive, both with man and the lower animals, of certain emotions. Mr. Spencer gives also an interesting discussion on the relations between poetry, recitative and song.

[2] I find in Lord Monboddo's Origin of Language, 1774, Vol. I, p. 469, that Dr. Blacklock likewise thought "that the first language among men was music, and that before our ideas were expressed by articulate sounds, they were communicated by tones, varied according to different degrees of gravity and acuteness."

Women are generally thought to possess sweeter voices than men, and as far as this serves as any guide, we may infer that they first acquired musical powers in order to attract the other sex.[1] But if so, this must have occurred long ago, before our ancestors had become sufficiently human to treat and value their women merely as useful slaves. The impassioned orator, bard, or musician, when with his varied tones and cadences he excites the strongest emotions in his hearers, little suspects that he uses the same means by which his half-human ancestors long ago aroused each other's ardent passions during their courtship and rivalry.

The Influence of Beauty in determining the Marriages of Mankind

In civilized life man is largely, but by no means exclusively, influenced in the choice of his wife by external appearance; but we are chiefly concerned with primeval times, and our only means of forming a judgment on this subject is to study the habits of existing semicivilized and savage nations. If it can be shown that the men of different races prefer women having various characteristics, or conversely with the women, we have then to inquire whether such choice, continued during many generations, would produce any sensible effect on the race, either on one sex or both, according to the form of inheritance which has prevailed.

It will be well first to show in some detail that savages pay the greatest attention to their personal appearance.[2] That they

[1] See an interesting discussion on this subject by Häckel, Generelle Morph., 1866, B. II, s. 246.

[2] A full and excellent account of the manner in which savages in all parts of the world ornament themselves is given by the Italian traveler, Professor Mantegazza, "Rio de la Plata," Viaggi e Studi, 1867, pp. 525–545; all the following statements, when other references are not given, are taken from this work. See also Waitz, Introduction to Anthropology, English translation, 1863, Vol. I, p. 275, *et passim*. Lawrence also gives very full details in his Lectures on Physiology, 1822. Since this chapter was written, Sir J. Lubbock has published his Origin of Civilization, 1870, in which there is an interesting chapter on the present subject, and from which (pp. 42, 48) I have taken some facts about savages dyeing their teeth and hair, and piercing their teeth.

have a passion for ornament is notorious; and an English philosopher goes so far as to maintain that clothes were first made for ornament and not for warmth. As Professor Waitz remarks, "However poor and miserable man is, he finds a pleasure in adorning himself." The extravagance of the naked Indians of South America in decorating themselves is shown "by a man of large stature gaining with difficulty enough by the labor of a fortnight to procure in exchange the *chica* necessary to paint himself red.[1] The ancient barbarians of Europe during the Reindeer period brought to their caves any brilliant or singular objects which they happened to find. Savages at the present day everywhere deck themselves with plumes, necklaces, armlets, earrings, etc. They paint themselves in the most diversified manner. "If painted nations," as Humboldt observes, "had been examined with the same attention as clothed nations, it would have been perceived that the most fertile imagination and the most mutable caprice have created the fashions of painting, as well as those of garments."

In one part of Africa the eyelids are colored black; in another the nails are colored yellow or purple. In many places the hair is dyed of various tints. In different countries the teeth are stained black, red, blue, etc., and in the Malay Archipelago it is thought shameful to have white teeth "like those of a dog." Not one great country can be named, from the Polar regions in the north to New Zealand in the south, in which the aborigines do not tattoo themselves. This practice was followed by the Jews of old, and by the ancient Britons. In Africa some of the natives tattoo themselves, but it is a much more common practice to raise protuberances by rubbing salt into incisions made in various parts of the body; and these are considered by the inhabitants of Kordofan and Darfur "to be great personal attractions." In the Arab countries no beauty can be perfect until the cheeks "or temples have been gashed."[2] In South America, as Humboldt

[1] Humboldt, Personal Narrative, English translation, Vol. IV, p. 515; on the imagination shown in painting the body, p. 522; on modifying the form of the calf of the leg, p. 466.

[2] The Nile Tributaries, 1867; The Albert Nyanza, 1866, Vol. I, p. 218.

remarks, "a mother would be accused of culpable indifference toward her children, if she did not employ artificial means to shape the calf of the leg after the fashion of the country." In the Old and New Worlds the shape of the skull was formerly modified during infancy in the most extraordinary manner, as is still the case in many places, and such deformities are considered ornamental. For instance, the savages of Colombia[1] deem a much flattened head "an essential point of beauty."

The hair is treated with especial care in various countries; it is allowed to grow to full length, so as to reach to the ground, or is combed into "a compact frizzled mop, which is the Papuan's pride and glory."[2] In northern Africa "a man requires a period of from eight to ten years to perfect his coiffure." With other nations the head is shaved, and in parts of South America and Africa even the eyebrows and eyelashes are eradicated. The natives of the Upper Nile knock out the four front teeth, saying that they do not wish to resemble brutes. Further south, the Batokas knock out only the two upper incisors, which, as Livingstone[3] remarks, gives the face a hideous appearance, owing to the prominence of the lower jaw; but these people think the presence of the incisors most unsightly, and on beholding some Europeans, cried out, "Look at the great teeth!" The chief Sebituani tried in vain to alter this fashion. In various parts of Africa and in the Malay Archipelago the natives file the incisors into points like those of a saw, or pierce them with holes into which they insert studs.

As the face with us is chiefly admired for its beauty, so with savages it is the chief seat of mutilation. In all quarters of the world the septum and more rarely the wings of the nose are pierced, rings, sticks, feathers, and other ornaments being inserted into the holes. The ears are everywhere pierced and similarly ornamented, and with the Botocudos and Lenguas of South America the hole is gradually so much enlarged that the lower edge

[1] Quoted by Prichard, Physical History of Mankind, 4th ed., 1851, Vol. I, p. 321.

[2] On the Papuans, see Wallace, The Malay Archipelago, Vol. II, p. 445. On the coiffure of the Africans, see Sir S. Baker, The Albert Nyanza, Vol. I, p. 210.

[3] Travels, p. 533.

touches the shoulder. In North and South America and in Africa either the upper or lower lip is pierced; and with the Botocudos the hole in the lower lip is so large that a disk of wood four inches in diameter is placed in it. Mantegazza gives a curious account of the shame felt by a South American native, and of the ridicule which he excited when he sold his *tembeta*, — the large colored piece of wood which is passed through the hole. In central Africa the women perforate the lower lip and wear a crystal, which, from the movement of the tongue, has "a wriggling motion, indescribably ludicrous during conversation." The wife of the chief of Latooka told Sir S. Baker[1] that Lady Baker "would be much improved if she would extract her four front teeth from the lower jaw and wear the long pointed polished crystal in her under lip." Further south with the Makololo, the upper lip is perforated and a large metal and bamboo ring, called a *pelelé*, is worn in the hole. "This caused the lip in one case to project two inches beyond the tip of the nose; and when the lady smiled the contraction of the muscles elevated it over the eyes. 'Why do the women wear these things?' the venerable chief, Chinsurdi, was asked. Evidently surprised at such a stupid question, he replied, 'For beauty! They are the only beautiful things women have: men have beards, women have none. What kind of person would she be without the *pelelé*? She would not be a woman at all with a mouth like a man but no beard.'"[2]

Hardly any part of the body, which can be unnaturally modified, has escaped. The amount of suffering thus caused must have been extreme, for many of the operations require several years for their completion, so that the idea of their necessity must be imperative. The motives are various; the men paint their bodies to make themselves appear terrible in battle; certain mutilations are connected with religious rites, or they mark the age of puberty, or the rank of the man, or they serve to distinguish the tribes. Among savages the same fashions prevail for long

[1] The Albert Nyanza, 1866, Vol. I, p. 217.

[2] Livingstone, *British Association*, 1860; report given in the *Athenæum*, July 7, 1860, p. 29.

periods,[1] and thus mutilations, from whatever cause first made, soon come to be valued as distinctive marks. But self-adornment, vanity, and the admiration of others seem to be the commonest motives. In regard to tattooing, I was told by the missionaries in New Zealand that when they tried to persuade some girls to give up the practice, they answered, "We must just have a few lines on our lips, else when we grow old we shall be so very ugly." With the men of New Zealand, a most capable judge[2] says, "To have fine tattooed faces was the great ambition of the young both to render themselves attractive to the ladies and conspicuous in war." A star tattooed on the forehead and a spot on the chin are thought by the women in one part of Africa to be irresistible attractions.[3] In most but not all parts of the world the men are more ornamented than the women, and often in a different manner; sometimes, though rarely, the women are hardly at all ornamented. As the women are made by savages to perform the greatest share of the work, and as they are not allowed to eat the best kinds of food, so it accords with the characteristic selfishness of man that they should not be allowed to obtain or use the finest ornaments. Lastly, it is a remarkable fact, as proved by the foregoing quotations, that the same fashions in modifying the shape of the head, in ornamenting the hair, in painting, in tattooing, in perforating the nose, lips, or ears, in removing or filing the teeth, etc., now prevail and have long prevailed in the most distant quarters of the world. It is extremely improbable that these practices, followed by so many distinct nations, should be due to tradition from any common source. They indicate the close similarity of the mind of man, to whatever race he may belong, just as do the almost universal habits of dancing, masquerading, and making rude pictures.

Having made these preliminary remarks on the admiration felt by savages for various ornaments, and for deformities most

[1] Sir S. Baker (The Albert Nyanza, Vol. I. p. 210), speaking of the natives of central Africa says, "Every tribe has a distinct and unchanging fashion for dressing the hair." See Agassiz (Journey in Brazil, 1868, p. 318) on the invariability of the tattooing of the Amazonian Indians.

[2] Rev. R. Taylor, New Zealand and its Inhabitants, 1855, p. 152.

[3] Mantegazza, Viaggi e Studi, p. 542.

unsightly in our eyes, let us see how far the men are attracted by the appearance of their women, and what are their ideas of beauty. I have heard it maintained that savages are quite indifferent about the beauty of their women, valuing them solely as slaves; it may therefore be well to observe that this conclusion does not at all agree with the care which the women take in ornamenting themselves or with their vanity. Burchell[1] gives an amusing account of a Bushwoman who used as much grease, red ochre, and shining powder "as would have ruined any but a very rich husband." She displayed also "much vanity and too evident a consciousness of her superiority." Mr. Winwood Reade informs me that the negroes of the west coast often discuss the beauty of their women. Some competent observers have attributed the fearfully common practice of infanticide partly to the desire felt by the women to retain their good looks.[2] In several regions the women wear charms and use love philters to gain the affections of the men; and Mr. Brown enumerates four plants used for this purpose by the women of northwestern America.[3]

Hearne,[4] an excellent observer, who lived many years with the American Indians, says, in speaking of the women, "Ask a Northern Indian what is beauty, and he will answer, a broad flat face, small eyes, high cheek bones, three or four broad black lines across each cheek, a low forehead, a large broad chin, a clumsy hook nose, a tawny hide, and breasts hanging down to the belt." Pallas, who visited the northern parts of the Chinese Empire, says, "Those women are preferred who have the Mandschú form; that is to say, a broad face, high cheek bones, very broad noses, and enormous ears;"[5] and Vogt remarks that the

[1] Travels in South Africa, 1824, Vol. I, p. 414.

[2] See for references, Gerland, Ueber das Aussterben der Naturvölker, 1868, s. 51, 53, 55; also Azara, Voyages, etc., Tome II, p. 116.

[3] On the vegetable productions used by the Northwestern American Indians, *Pharmaceutical Journal*, Vol. X.

[4] A Journey from Prince of Wales Fort, 8vo, edit. 1796, p. 89.

[5] Quoted by Prichard, Physical History of Mankind, 1844, 3d ed., Vol. IV, p. 519; Vogt, Lectures on Man, English translation, p. 129. On the opinion of the Chinese on the Cingalese, E. Tennent, Ceylon, 1859, Vol. II, p. 107.

obliquity of the eye, which is proper to the Chinese and Japanese, is exaggerated in their pictures for the purpose, as it seems, "of exhibiting its beauty, as contrasted with the eye of the red-haired barbarians." It is well known, as Hue repeatedly remarks, that the Chinese of the interior think Europeans hideous, with their white skins and prominent noses. The nose is far from being too prominent, according to our ideas, in the natives of Ceylon; yet "the Chinese in the seventh century, accustomed to the flat features of the Mongol races, were surprised at the prominent noses of the Cingalese; and Thsang described them as 'having the beak of a bird, with the body of a man.'"

Finlayson, after minutely describing the people of Cochin China, says that their rounded heads and faces are their chief characteristics; and he adds, "The roundness of the whole countenance is more striking in the women, who are reckoned beautiful in proportion as they display this form of face." The Siamese have small noses with divergent nostrils, a wide mouth, rather thick lips, a remarkably large face, with very high and broad cheek bones. It is, therefore, not wonderful that "beauty, according to our notion, is a stranger to them. Yet they consider their own females to be much more beautiful than those of Europe."[1]

It is well known that with many Hottentot women the posterior part of the body projects in a wonderful manner; they are steatopygous; and Sir Andrew Smith is certain that this peculiarity is greatly admired by the men.[2] He once saw a woman who was considered a beauty, and she was so immensely developed behind that when seated on level ground she could not rise, and had to push herself along until she came to a slope. Some of the women in various negro tribes have the same peculiarity; and, according to Burton, the Somal men "are said to choose their wives by ranging them in a line, and by picking her

[1] Prichard, as taken from Crawfurd and Finlayson, Physical History of Mankind, Vol. IV, pp. 534, 536.

[2] Idem illustrissimus viator dixit mihi praecinctorium vel tabulam foeminae, quod nobis teterrimum est, quondam permagno aestimari ab hominibus in hac gente. Nunc res mutata est, et censent talem conformationem minime optandam esse.

out who projects farthest *a tergo*. Nothing can be more hateful to a negro than the opposite form."[1]

With respect to color, the negroes rallied Mungo Park on the whiteness of his skin and the prominence of his nose, both of which they considered as "unsightly and unnatural conformations." He in return praised the glossy jet of their skins and the lovely depression of their noses; this they said was "honey-mouth," nevertheless they gave him food. The African Moors, also, "knitted their brows and seemed to shudder" at the whiteness of his skin. On the eastern coast the negro boys, when they saw Burton, cried out, "Look at the white man; does he not look like a white ape?" On the western coast, as Mr. Winwood Reade informs me, the negroes admire a very black skin more than one of a lighter tint. But their horror of whiteness may be attributed, according to this same traveler, partly to the belief held by most negroes that demons and spirits are white, and partly to their thinking it a sign of ill health.

The Banyai of the more southern part of the continent are negroes, but "a great many of them are of a light coffee-and-milk color, and, indeed, this color is considered handsome throughout the whole country;" so that here we have a different standard of taste. With the Kafirs, who differ much from negroes, "the skin, except among the tribes near Delagoa Bay, is not usually black, the prevailing color being a mixture of black and red, the most common shade being chocolate. Dark complexions, as being most common, are naturally held in the highest esteem. To be told that he is light colored, or like a white man, would be deemed a very poor compliment by a Kafir. I have heard of one unfortunate man who was so very fair that no girl would marry him." One of the titles of the Zulu king is, "You who are black."[2] Mr. Galton, in speaking to me about the natives of South Africa,

[1] The *Anthropological Review*, November, 1864, p. 237. For additional references see Waitz, Introduction to Anthropology, English translation, 1863, Vol. I, p. 105.

[2] Mungo Park's Travels in Africa, 4to, 1816, pp. 53, 131. Burton's statement is quoted by Schaaffhausen, Archiv für Anthropologie, 1866, s. 163. On the Banyai, see Livingstone, Travels, p. 64. On the Kafirs, see the Rev. J. Shooter, The Kafirs of Natal and the Zulu Country, 1857, p. 1.

remarked that their ideas of beauty seem very different from ours; for in one tribe two slim, slight, and pretty girls were not admired by the natives.

Turning to other quarters of the world; in Java a yellow not a white girl is considered, according to Madame Pfeiffer, a beauty. A man of Cochin China "spoke with contempt of the wife of the English ambassador, that she had white teeth like a dog, and a rosy color like that of potato flowers." We have seen that the Chinese dislike our white skin, and that the North Americans admire "a tawny hide." In South America the Yurucares, who inhabit the wooded, damp slopes of the eastern Cordillera, are remarkably pale colored, as their name in their own language expresses; nevertheless they consider European women as very inferior to their own.[1]

In several tribes of North America the hair on the head grows to a wonderful length; and Catlin gives a curious proof of how much this is esteemed, for the chief of the Crows was elected to this office from having the longest hair of any man in the tribe, namely, ten feet and seven inches. The Aymaras and Quichuas of South America likewise have very long hair; and this, as Mr. D. Forbes informs me, is so much valued as a beauty that cutting it off was the severest punishment which he could inflict on them. In both the northern and southern halves of the continent the natives sometimes increase the apparent length of the hair by weaving into it fibrous substances. Although the hair on the head is thus cherished, that on the face is considered by the North American Indians "as very vulgar," and every hair is carefully eradicated. This practice prevails throughout the American continent, from Vancouver's Island in the north to Tierra del Fuego in the south. When York Minster, a Fuegian on board the *Beagle*, was taken back to his country, the natives told him he ought to pull out the few short hairs on his face. They also threatened a young missionary, who was left for a

[1] For the Javans and Cochin Chinese, see Waitz, Introduction to Anthropology, English translation, Vol. I, p. 305. On the Yuracaras, A. d'Orligny, as quoted in Prichard, Physical History of Mankind, 3d ed., Vol. V, p. 476.

time with them, to strip him naked, and pluck the hairs from his face and body, yet he was far from being a hairy man. This fashion is carried so far that the Indians of Paraguay eradicate their eyebrows and eyelashes, saying that they do not wish to be like horses.[1]

It is remarkable that throughout the world the races which are almost completely destitute of a beard dislike hairs on the face and body, and take pains to eradicate them. The Kalmucks are beardless, and they are well known, like the Americans, to pluck out all straggling hairs; and so it is with the Polynesians, some of the Malays, and the Siamese. Mr. Veitch states that the Japanese ladies "all objected to our whiskers, considering them very ugly, and told us to cut them off, and be like Japanese men." The New Zealanders have short, curled beards, yet they formerly plucked out the hairs on the face. They had a saying that "There is no woman for a hairy man"; but it would appear that the fashion has changed in New Zealand, perhaps owing to the presence of Europeans, and I am assured that beards are now admired by the Maoris.[2]

On the other hand, bearded races admire and greatly value their beards. Among the Anglo-Saxons every part of the body had a recognized value, the loss of the beard being estimated at twenty shillings, while the breaking of a thigh was fixed at only twelve.[3] In the East men swear solemnly by their beards. We have seen that Chinsurdi, the chief of the Makololo in Africa, thought that beards were a great ornament. In the Pacific the Fijian's beard is "profuse and bushy, and is his greatest pride"; while the inhabitants of the adjacent archipelagoes of Tonga and Samoa are "beardless and abhor a rough

[1] North American Indians, by G. Catlin, 3d ed., 1842, Vol. I, p. 4; Vol. II, p. 227. On the natives of Vancouver's Island, see Sproat, Scenes and Studies of Savage Life, 1868, p. 25. On the Indians of Paraguay, see Azara, Voyages, Tome II, p. 105.

[2] On the Siamese, see Prichard, Physical History of Mankind, Vol. IV, p. 533. On the Japanese, see Veitch in Gardeners' Chronicle, 1860, p. 1104. On the New Zealanders, see Mantegazza, Viaggi e Studi, 1867, p. 526. For the other nations mentioned, see references in Lawrence, Lectures on Physiology, etc., 1822, p. 272.

[3] Lubbock, Origin of Civilization, 1870, p. 321.

chin." In one island alone of the Ellice group "the men are heavily bearded, and not a little proud thereof." [1]

We thus see how widely the different races of man differ in their taste for the beautiful. In every nation sufficiently advanced to have made effigies of their gods or their deified rulers, the sculptors no doubt have endeavored to express their highest ideal of beauty and grandeur.[2] Under this point of view it is well to compare in our mind the Jupiter or Apollo of the Greeks with the Egyptian or Assyrian statues; and these with the hideous bas-reliefs on the ruined buildings of Central America.

I have met with very few statements opposed to this conclusion. Mr. Winwood Reade, however, who has had ample opportunities for observation, not only with the negroes of the west coast of Africa but with those of the interior who have never associated with Europeans, is convinced that their ideas of beauty are *on the whole* the same as ours; and Dr. Rohlfs writes to me to the same effect with respect to Bornu and the countries inhabited by the Fulah tribes. Mr. Reade found that he agreed with the negroes in their estimation of the beauty of the native girls; and that their appreciation of the beauty of European women corresponded with ours. They admire long hair, using artificial means to make it appear abundant; they admire also a beard, though themselves very scantily provided. Mr. Reade feels doubtful what kind of a nose is most appreciated; a girl has been heard to say, "I do not want to marry him, he has got no nose"; and this shows that a very flat nose is not admired. We should, however, bear in mind that the depressed, broad noses and projecting jaws of the negroes of the west coast are exceptional types with the inhabitants of Africa. Notwithstanding the foregoing statements, Mr. Reade admits that negroes "do not like the color of our skin; they look on blue eyes with aversion, and they think our noses too long and our lips too thin." He does not think it probable that negroes would ever prefer the most beautiful European

[1] Dr. Barnard Davis quotes Mr. Prichard and others for these facts in regard to the Polynesians, in *Anthropological Review*, April, 1870, pp. 185, 191.

[2] Ch. Comte has remarks to this effect in his Traité de Législation, 3d ed., 1837, p. 136.

woman, on the mere grounds of physical admiration, to a good-looking negress.[1]

The general truth of the principle, long ago insisted on by Humboldt,[2] that man admires and often tries to exaggerate whatever characters nature may have given him, is shown in many ways. The practice of beardless races extirpating every trace of a beard, and often all the hairs on the body, affords one illustration. The skull has been greatly modified during ancient and modern times by many nations; and there can be little doubt that this has been practiced, especially in North and South America, in order to exaggerate some natural and admired peculiarity. Many American Indians are known to admire a head so extremely flattened as to appear to us idiotic. The natives on the north-western coast compress the head into a pointed cone; and it is their constant practice to gather the hair into a knot on the top of the head, for the sake, as Dr. Wilson remarks, "of increasing the apparent elevation of the favorite conoid form." The inhabitants of Arakan "admire a broad, smooth forehead, and in order to produce it, they fasten a plate of lead on the heads of the new-born children." On the other hand, "a broad, well-rounded occiput is considered a great beauty" by the natives of the Fiji Islands.[3]

As with the skull, so with the nose; the ancient Huns during the age of Attila were accustomed to flatten the noses of their

[1] The African Sketch Book, 1873, Vol. II, pp. 253, 394, 521. The Fuegians, as I have been informed by a missionary who long resided with them, consider European women as extremely beautiful; but from what we have seen of the judgment of the other aborigines of America, I cannot but think that this must be a mistake, unless indeed the statement refers to the few Fuegians who have lived for some time with Europeans, and who must consider us as superior beings. I should add that a most experienced observer, Captain Burton, believes that a woman whom we consider beautiful is admired throughout the world (*Anthropological Review*, March, 1864, p. 245).

[2] Personal Narrative, English translation, Vol. IV, p. 518, and elsewhere. Mantegazza, in his Viaggi e Studi, 1867, strongly insists on this same principle.

[3] On the skulls of the American tribes, see Nott and Gliddon, Types of Mankind, 1854, p. 440; Prichard, Physical History of Mankind, 3d ed., Vol. I, p. 321. On the natives of Arakan, see Physical History of Mankind, Vol. IV, p. 537; Wilson, Physical Ethnology, Smithsonian Institution, 1863, p. 288. On the Fijians, see Wilson, Physical Ethnology, Smithsonian Institution, 1863, p. 290. Sir J. Lubbock (Prehistoric Times, 2d ed., 1869, p. 506) gives an excellent résumé on this subject.

infants with bandages, "for the sake of exaggerating a natural conformation." With the Tahitians, to be called "long-nose" is considered as an insult, and they compress the noses and foreheads of their children for the sake of beauty. The same holds with the Malays of Sumatra, the Hottentots, certain negroes, and the natives of Brazil.[1] The Chinese have by nature unusually small feet;[2] and it is well known that the women of the upper classes distort their feet to make them still smaller. Lastly, Humboldt thinks that the American Indians prefer coloring their bodies with red paint in order to exaggerate their natural tint; and until recently European women added to their naturally bright colors by rouge and white cosmetics; but it may be doubted whether barbarous nations have generally had any such intention in painting themselves.

In the fashions of our own dress we see exactly the same principle and the same desire to carry every point to an extreme; we exhibit, also, the same spirit of emulation. But the fashions of savages are far more permanent than ours; and whenever their bodies are artificially modified, this is necessarily the case. The Arab women of the upper Nile occupy about three days in dressing their hair; they never imitate other tribes, "but simply vie with each other in the superlativeness of their own style." Dr. Wilson, in speaking of the compressed skulls of various American races, adds, "Such usages are among the least eradicable, and long survive the shock of revolutions that change dynasties and efface more important national peculiarities."[3] The same principle comes into play in the art of breeding; and we can thus understand, as I have elsewhere explained,[4] the wonderful development of the many races of animals and plants, which

[1] On the Huns, see Godron, De l'Espèce, 1859, Tome II, p. 300. On the Tahitians, see Waitz, Anthropology, English translation, Vol. I, p. 305. Marsden, quoted by Prichard in Physical History of Mankind, 3d ed., Vol. V, p. 67. Lawrence, Lectures on Physiology, p. 337.

[2] This fact was ascertained in the Reise der Novara: "Anthropolog. Theil," Dr. Weisbach, 1867, s. 265.

[3] Smithsonian Institution, 1863, p. 289. On the fashions of Arab women, see Sir S. Baker, The Nile Tributaries, 1867, p. 121.

[4] The Variation of Animals and Plants under Domestication, Vol. I, p. 214; Vol. II, p. 240.

have been kept merely for ornament. Fanciers always wish each character to be somewhat increased; they do not admire a medium standard; they certainly do not desire any great and abrupt change in the character of their breeds; they admire solely what they are accustomed to, but they ardently desire to see each characteristic feature a little more developed.

The senses of man and of the lower animals seem to be so constituted that brilliant colors and certain forms, as well as harmonious and rhythmical sounds, give pleasure and are called beautiful; but why this should be so, we know not. It is certainly not true that there is in the mind of man any universal standard of beauty with respect to the human body. It is, however, possible that certain tastes may in the course of time become inherited, though there is no evidence in favor of this belief; and if so, each race would possess its own innate ideal standard of beauty. It has been argued[1] that ugliness consists in an approach to the structure of the lower animals, and no doubt this is partly true with the more civilized nations in which intellect is highly appreciated; but this explanation will hardly apply to all forms of ugliness. The men of each race prefer what they are accustomed to; they cannot endure any great change; but they like variety and admire each characteristic carried to a moderate extreme.[2] Men accustomed to a nearly oval face, to straight and regular features, and to bright colors admire, as we Europeans know, these points when strongly developed. On the other hand, men accustomed to a broad face with high cheek bones, a depressed nose, and a black skin admire these peculiarities when strongly marked. No doubt characters of all kinds may be too much developed for beauty. Hence a perfect beauty, which implies many characters modified in a particular manner, will be in every race a prodigy. As the great anatomist Bichat long ago said, if every one were cast in the same mold, there would be no such thing as beauty. If all our women were to

[1] Schaaffhausen, Archiv für Anthropologie, 1866, s. 164.

[2] Mr. Bain has collected (Mental and Moral Science, 1868, pp. 304–314) about a dozen more or less different theories of the idea of beauty; but none are quite the same as that here given.

become as beautiful as the Venus de' Medici, we should for a time be charmed; but we should soon wish for variety; and as soon as we had obtained variety we should wish to see certain characters a little exaggerated beyond the then existing common standard.

We have seen in the last chapter that with all barbarous races ornaments, dress, and external appearance are highly valued; and that the men judge of the beauty of their women by widely different standards. We must next inquire whether this preference and the consequent selection during many generations of those women, which appear to the men of each race the most attractive, has altered the character either of the females alone, or of both sexes. With mammals the general rule appears to be that characters of all kinds are inherited equally by the males and females; we might therefore expect that with mankind any characters gained by the females or by the males through sexual selection would commonly be transferred to the offspring of both sexes. If any change has thus been effected, it is almost certain that the different races would be differently modified, as each has its own standard of beauty.

With mankind, especially with savages, many causes interfere with the action of sexual selection as far as the bodily frame is concerned. Civilized men are largely attracted by the mental charms of women, by their wealth, and especially by their social position; for men rarely marry into a much lower rank. The men who succeed in obtaining the more beautiful women will not have a better chance of leaving a long line of descendants than other men with plainer wives, save the few who bequeath their fortunes according to primogeniture. With respect to the opposite form of selection, namely, of the more attractive men by the women, although in civilized nations women have free or almost free choice, which is not the case with barbarous races, yet their choice is largely influenced by the social position and wealth of the men; and the success of the latter in life depends much on their intellectual powers and energy, or on the fruits of these same powers in their forefathers. No excuse is needed for treating this subject in some detail; for, as the German philosopher Schopenhauer remarks, "the final aim of all love intrigues,

be they comic or tragic, is really of more importance than all other ends in human life. What it all turns upon is nothing less than the composition of the next generation. . . . It is not the weal or woe of any one individual, but that of the human race to come, which is here at stake." [1]

There is, however, reason to believe that in certain civilized and semicivilized nations sexual selection has effected something in modifying the bodily frame of some of the members. Many persons are convinced, as it appears to me with justice, that our aristocracy, including under this term all wealthy families in which primogeniture has long prevailed, from having chosen during many generations from all classes the more beautiful women as their wives, have become handsomer, according to the European standard, than the middle classes; yet the middle classes are placed under equally favorable conditions of life for the perfect development of the body. Cook remarks that the superiority in personal appearance "which is observable in the erees or nobles in all the other islands (of the Pacific) is found in the Sandwich Islands"; but this may be chiefly due to their better food and manner of life.

The old traveler Chardin, in describing the Persians, says their "blood is now highly refined by frequent intermixtures with the Georgians and Circassians, two nations which surpass all the world in personal beauty. There is hardly a man of rank in Persia who is not born of a Georgian or Circassian mother." He adds that they inherit their beauty "not from their ancestors, for without the above mixture, the men of rank in Persia, who are descendants of the Tartars, would be extremely ugly." [2] Here is a more curious case: the priestesses who attended the temple of Venus Erycina at San Giuliano in Sicily were selected for their beauty out of the whole of Greece; they were not vestal virgins, and Quatrefages,[3] who states the foregoing fact, says that the

[1] "Schopenhauer and Darwinism," in *Journal of Anthropology*, January, 1871, p. 323.

[2] These quotations are taken from Lawrence (Lectures on Physiology, etc., 1822, p. 393), who attributes the beauty of the upper classes in England to the men having long selected the more beautiful women.

[3] "Anthropologie," *Revue des Cours Scientifiques*, October, 1868, p. 721.

women of San Giuliano are now famous as the most beautiful in the island, and are sought by artists as models. But it is obvious that the evidence in all the above cases is doubtful.

The following case, though relating to savages, is well worth giving from its curiosity. Mr. Winwood Reade informs me that the Jolofs, a tribe of negroes on the west coast of Africa, "are remarkable for their uniformly fine appearance." A friend of his asked one of these men, "How is it that every one whom I meet is so fine looking, not only your men but your women?" The Jolof answered, "It is very easily explained; it has always been our custom to pick out our worse-looking slaves and to sell them." It need hardly be added that with all savages, female slaves serve as concubines. That this negro should have attributed, whether rightly or wrongly, the fine appearance of his tribe to the long-continued elimination of the ugly women is not so surprising as it may at first appear; for I have elsewhere shown [1] that the negroes fully appreciate the importance of selection in the breeding of their domestic animals, and I could give from Mr. Reade additional evidence on this head.

The Causes which prevent or check the Action of Sexual Selection with Savages

The chief causes are, first, so-called communal marriages or promiscuous intercourse; secondly, the consequences of female infanticide; thirdly, early betrothals; and lastly, the low estimation in which women are held, as mere slaves. These four points must be considered in some detail.

It is obvious that as long as the pairing of man, or of any other animal, is left to mere chance, with no choice exerted by either sex, there can be no sexual selection; and no effect will be produced on the offspring by certain individuals having had an advantage over others in their courtship. Now it is asserted that there exist at the present day tribes which practice what Sir J. Lubbock by courtesy calls communal marriages; that is, all the men and women in the tribe are husbands and wives to one

[1] The Variation of Animals and Plants under Domestication, Vol. I, p. 207.

another. The licentiousness of many savages is no doubt astonishing, but it seems to me that more evidence is requisite, before we fully admit that their intercourse is in any case promiscuous. Nevertheless all those who have most closely studied the subject,[1] and whose judgment is worth much more than mine, believe that communal marriage (this expression being variously guarded) was the original and universal form throughout the world, including therein the intermarriage of brothers and sisters. The late Sir A. Smith, who had traveled widely in South Africa, and knew much about the habits of savages there and elsewhere, expressed to me the strongest opinion that no race exists in which woman is considered as the property of the community. I believe that his judgment was largely determined by what is implied by the term "marriage." Throughout the following discussion I use the term in the same sense as when naturalists speak of animals as monogamous, meaning thereby that the male is accepted by or chooses a single female, and lives with her either during the breeding season, or for the whole year, keeping possession of her by the law of might; or, as when they speak of a polygamous species, meaning that the male lives with several females. This kind of marriage is all that concerns us here, as it suffices the work of sexual selection. But I know that some of the writers, above referred to, imply by the term "marriage," a recognized right, protected by the tribe.

The indirect evidence in favor of the belief of the former prevalence of communal marriages is strong, and rests chiefly on the terms of relationship which are employed between the members of the same tribe, implying a connection with the tribe and not with either parent. But the subject is too large and complex for

[1] Sir J. Lubbock, The Origin of Civilization, 1870, chap. iii, especially pp. 60–67. Mr. M'Lennan, in his extremely valuable work on Primitive Marriage, 1865, p. 162, speaks of the union of the sexes in the earliest times as "loose, transitory, and in some degree promiscuous." Mr. M'Lennan and Sir J. Lubbock have collected much evidence on the extreme licentiousness of savages at the present time. Mr. L. H. Morgan, in his interesting memoir on the classificatory system of relationship (*Proceedings American Academy of Sciences*, February, 1868, Vol. VII, p. 475), concludes that polygamy and all forms of marriage during primeval times were essentially unknown. It appears also, from Sir J. Lubbock's work, that Bachofen likewise believes that communal intercourse originally prevailed.

even an abstract to be here given, and I will confine myself to a few remarks. It is evident in the case of such marriages, or where the marriage tie is very loose, that the relationship of the child to its father cannot be known. But it seems almost incredible that the relationship of the child to its mother should ever be completely ignored, especially as the women in most savage tribes nurse their infants for a long time. Accordingly, in many cases the lines of descent are traced through the mother alone, to the exclusion of the father. But in other cases the terms employed express a connection with the tribe alone, to the exclusion even of the mother. It seems possible that the connection between the related members of the same barbarous tribe, exposed to all sorts of danger, might be so much more important, owing to the need of mutual protection and aid, than that between the mother and her child, as to lead to the sole use of terms expressive of the former relationships; but Mr. Morgan is convinced that this view is by no means sufficient.

The terms of relationship used in different parts of the world may be divided, according to the author just quoted, into two great classes, the classificatory and descriptive, — the latter being employed by us. It is the classificatory system which so strongly leads to the belief that communal and other extremely loose forms of marriage were originally universal. But as far as I can see, there is no necessity on this ground for believing in absolutely promiscuous intercourse; and I am glad to find that this is Sir J. Lubbock's view. Men and women, like many of the lower animals, might formerly have entered into strict though temporary unions for each birth, and in this case nearly as much confusion would have arisen in the terms of relationship as in the case of promiscuous intercourse. As far as sexual selection is concerned, all that is required is that choice should be exerted before the parents unite, and it signifies little whether the unions last for life or only for a season.

Besides the evidence derived from the terms of relationship, other lines of reasoning indicate the former wide prevalence of communal marriage. Sir J. Lubbock accounts[1] for the strange

[1] Address to British Association, "On the Social and Religious Condition of the Lower Races of Man," 1870, p. 20.

and widely extended habit of exogamy — that is, the men of one tribe taking wives from a distinct tribe — by communism having been the original form of intercourse; so that a man never obtained a wife for himself unless he captured her from a neighboring and hostile tribe, and then she would naturally have become his sole and valuable property. Thus the practice of capturing wives might have arisen; and from the honor so gained it might ultimately have become the universal habit. According to Sir J. Lubbock, we can also thus understand "the necessity of expiation for marriage as an infringement of tribal rites, since, according to old ideas, a man had no right to appropriate to himself that which belonged to the whole tribe." Sir J. Lubbock further gives a curious body of facts, showing that in old times high honor was bestowed on women who were utterly licentious; and this, as he explains, is intelligible, if we admit that promiscuous intercourse was the aboriginal and, therefore, long revered custom of the tribe.[1]

Although the manner of development of the marriage tie is an obscure subject, as we may infer from the divergent opinions on several points between the three authors who have studied it most closely, namely, Mr. Morgan, Mr. M'Lennan, and Sir J. Lubbock, yet from the foregoing and several other lines of evidence it seems probable[2] that the habit of marriage, in any strict sense of the word, has been gradually developed, and that almost promiscuous or very loose intercourse was once extremely common throughout the world. Nevertheless, from the strength of the feeling of jealousy all through the animal kingdom, as well as from the analogy of the lower animals, more particularly of those which come nearest to man, I cannot believe that absolutely promiscuous intercourse prevailed in times past, shortly before man attained to his present rank in the zoölogical scale. Man,

[1] Origin of Civilization, 1870, p. 86. In the several works above quoted there will be found copious evidence on relationship through the females alone, or with the tribe alone.

[2] Mr. C. Staniland Wake argues strongly (*Anthropologia*, March, 1874, p. 197) against the views held by these three writers on the former prevalence of almost promiscuous intercourse; and he thinks that the classificatory system of relationship can be otherwise explained.

as I have attempted to show, is certainly descended from some apelike creature. With the existing Quadrumana, as far as their habits are known, the males of some species are monogamous, but live during only a part of the year with the females; of this the orang seems to afford an instance. Several kinds, for example, some of the Indian and American monkeys, are strictly monogamous, and associate all the year around with their wives. Others are polygamous, for example, the gorilla and several American species, and each family lives separate. Even when this occurs, the families inhabiting the same district are probably somewhat social; the chimpanzee, for instance, is occasionally met with in large bands. Again, other species are polygamous, but several males, each with his own females, live associated in a body, as with several species of baboons.[1] We may indeed conclude, from what we know of the jealousy of all male quadrupeds, armed as many of them are with special weapons for battling with their rivals, that promiscuous intercourse in a state of nature is extremely improbable. The pairing may not last for life, but only for each birth; yet if the males which are the strongest and best able to defend or otherwise assist their females and young were to select the more attractive females, this would suffice for sexual selection.

Therefore, looking far enough back in the stream of time, and judging from the social habits of man as he now exists, the most probable view is that he aboriginally lived in small communities, each with a single wife, or if powerful with several, whom he jealously guarded against all other men. Or he may not have been a social animal, and yet have lived with several wives, like the gorilla; for all the natives "agree that but one adult male is seen in a band; when the young male grows up a contest takes place for mastery, and the strongest, by killing and driving out the others, establishes himself as the head of the community."[2]

[1] Brehm (Illust. Thierleben, B. I, p. 77) says *Cynocephalus hamadryas* lives in great troops containing twice as many adult females as adult males. See Rengger on American polygamous species, and Owen (Anatomy of Vertebrates, Vol. III, p. 746) on American monogamous species. Other references might be added.

[2] Dr. Savage, in *Boston Journal of Natural History*, 1845–1847, Vol. V, p. 423.

The younger males, being thus expelled and wandering about, would, when at last successful in finding a partner, prevent too close interbreeding within the limits of the same family.

Although savages are now extremely licentious, and although communal marriages may formerly have largely prevailed, yet many tribes practice some form of marriage, but of a far more lax nature than that of civilized nations. Polygamy, as just stated, is almost universally followed by the leading men in every tribe. Nevertheless there are tribes standing almost at the bottom of the scale which are strictly monogamous. This is the case with the Veddahs of Ceylon; they have a saying, according to Sir J. Lubbock,[1] "that death alone can separate husband and wife." An intelligent Kandyan chief, of course a polygamist, "was perfectly scandalized at the utter barbarism of living with only one wife, and never parting until separated by death." It was, he said, "just like the Wanderoo monkeys." Whether savages who now enter into some form of marriage, either polygamous or monogamous, have retained this habit from primeval times, or whether they have returned to some form of marriage after passing through a stage of promiscuous intercourse, I will not pretend to conjecture.

Infanticide

This practice is now very common throughout the world, and there is reason to believe that it prevailed much more extensively during former times.[2] Barbarians find it difficult to support themselves and their children, and it is a simple plan to kill their infants. In South America some tribes, according to Azara, formerly destroyed so many infants of both sexes that they were on the point of extinction. In the Polynesian Islands women have been known to kill from four or five to even ten of their children; and Ellis could not find a single woman who had not killed at least one. Wherever infanticide prevails the struggle for existence will be in so far less severe, and all the members of the tribe will have an almost equally good chance of rearing their

[1] Prehistoric Times, 1869, p. 424.

[2] Mr. M'Lennan, Primitive Marriage, 1865. See especially on exogamy and infanticide, *ibid.*, pp. 130, 138, 165.

few surviving children. In most cases a larger number of female than of male infants are destroyed, for it is obvious that the latter are of more value to the tribe, as they will, when grown up, aid in defending it, and can support themselves. But the trouble experienced by the women in rearing children, their consequent loss of beauty, the higher estimation set on them when few, and their happier fate, are assigned by the women themselves and by various observers as additional motives for infanticide. In Australia, where female infanticide is still common, Sir G. Grey estimated the proportion of native women to men as one to three; but others say as two to three. In a village on the eastern frontier of India, Colonel McCulloch found not a single female child.[1]

When, owing to female infanticide, the women of a tribe were few, the habit of capturing wives from neighboring tribes would naturally arise. Sir J. Lubbock, however, as we have seen, attributes the practice, in chief part, to the former existence of communal marriage, and to the men having consequently captured women from other tribes to hold as their sole property. Additional causes might be assigned, such as the communities being very small, in which case marriageable women would often be deficient. That the habit was most extensively practiced during former times, even by the ancestors of civilized nations, is clearly shown by the preservation of many curious customs and ceremonies, of which Mr. M'Lennan has given an interesting account. In our own marriages the "best man" seems originally to have been the chief abettor of the bridegroom in the act of capture. Now as long as men habitually procured their wives through violence and craft, they would have been glad to seize on any woman, and would not have selected the more attractive ones. But as soon as the practice of procuring wives from a distinct tribe was effected through barter, as now occurs in many places, the more attractive women would generally have been purchased.

[1] Dr. Gerland (Ueber das Aussterben der Naturvölker, 1868) has collected much information on infanticide. See especially *ibid.*, s. 27, 51, 54. Azara (Voyages, etc., Tome II, pp. 94, 116) enters in detail on the motives. See also M'Lennan (Primitive Marriage, p. 139) for cases in India.

The incessant crossing, however, between tribe and tribe, which necessarily follows from any form of this habit, would tend to keep all the people inhabiting the same country nearly uniform in character, and this would interfere with the power of sexual selection in differentiating the tribes.

The scarcity of women consequent on female infanticide leads also to another practice, that of polyandry, still common in several parts of the world, and which formerly, as Mr. M'Lennan believes, prevailed almost universally; but this latter conclusion is doubted by Mr. Morgan and Sir J. Lubbock.[1] Whenever two or more men are compelled to marry one woman, it is certain that all the women of the tribe will get married, and there will be no selection by the men of the more attractive women. But under these circumstances the women no doubt will have the power of choice, and will prefer the more attractive men. Azara, for instance, describes how carefully a Guana woman bargains for all sorts of privileges before accepting some one or more husbands; and the men in consequence take unusual care of their personal appearance. So among the Todas of India, who practice polyandry, the girls can accept or refuse any man.[2] A very ugly man in these cases would perhaps altogether fail in getting a wife, or get one later in life; but the handsomer men, although more successful in obtaining wives, would not, as far as we can see, leave more offspring to inherit their beauty than the less handsome husbands of the same women.

Early Betrothals and Slavery of Women

With many savages it is the custom to betroth the females while mere infants; and this would effectually prevent preference being exerted on either side, according to personal appearance. But it would not prevent the more attractive women from being afterward stolen or taken by force from their husbands by the more powerful men; and this often happens in Australia,

[1] Primitive Marriage, p. 208; Sir J. Lubbock, Origin of Civilization, p. 100. See also Mr. Morgan, *loc. cit.*, on the former prevalence of polyandry.

[2] Azara, Voyages, etc., Tome II, pp. 92–95; Colonel Marshall, Among the Todas, p. 212.

America, and elsewhere. The same consequences with reference to sexual selection would to a certain extent follow when women are valued almost solely as slaves or beasts of burden, as is the case with many savages. The men, however, at all times, would prefer the handsomest slaves, according to their standard of beauty.

We thus see that several customs prevail with savages which must greatly interfere with, or completely stop, the action of sexual selection. On the other hand, the conditions of life to which savages are exposed, and some of their habits, are favorable to natural selection; and this comes into play at the same time with sexual selection. Savages are known to suffer severely from recurrent famines; they do not increase their food by artificial means; they rarely refrain from marriage,[1] and generally marry while young. Consequently they must be subjected to occasional hard struggles for existence, and the favored individuals will alone survive.

At a very early period, before man attained to his present rank in the scale, many of his conditions would be different from what now obtain among savages. Judging from the analogy of the lower animals, he would then either live with a single female or be a polygamist. The most powerful and able males would succeed best in obtaining attractive females. They would also succeed best in the general struggle for life, and in defending their females, as well as their offspring, from enemies of all kinds. At this early period the ancestors of man would not be sufficiently advanced in intellect to look forward to distant contingencies; they would not foresee that the rearing of all their children, especially their female children, would make the struggle for life severer for the tribe. They would be governed more by their instincts and less by their reason than are savages at the present day. They would not at that period have partially lost one of the strongest of all instincts, common to all the lower animals,

[1] Burchell says (Travels in South Africa, 1824, Vol. II, p. 58) that among the wild nations of southern Africa neither men nor women ever pass their lives in a state of celibacy. Azara (Voyages dans l'Amérique Méridien, Tome II, 1809, p. 21) makes precisely the same remark in regard to the wild Indians of South America.

namely, the love of their young offspring; and consequently they would not have practiced female infanticide. Women would not have been thus rendered scarce, and polyandry would not have been practiced; for hardly any other cause, except the scarcity of women, seems sufficient to break down the natural and widely prevalent feeling of jealousy, and the desire of each male to possess a female for himself. Polyandry would be a natural stepping-stone to communal marriages or almost promiscuous intercourse, though the best authorities believe that this latter habit preceded polyandry. During primordial times there would be no early betrothals, for this implies foresight. Nor would women be valued merely as useful slaves or beasts of burden. Both sexes, if the females as well as the males were permitted to exert any choice, would choose their partners not for mental charms or property or social position, but almost solely from external appearance. All the adults would marry or pair, and all the offspring, as far as that was possible, would be reared, so that the struggle for existence would be periodically excessively severe. Thus during these times all the conditions for sexual selection would have been more favorable than at a later period, when man had advanced in his intellectual powers but had retrograded in his instincts. Therefore, whatever influence sexual selection may have had in producing the differences between the races of man, and between man and the higher Quadrumana, this influence would have been more powerful at a remote period than at the present day, though probably not yet wholly lost.

The Manner of Action of Sexual Selection with Mankind

With primeval men under the favorable conditions just stated, and with those savages who at the present time enter into any marriage tie, sexual selection has probably acted in the following manner, subject to greater or less interference from female infanticide, early betrothals, etc. The strongest and most vigorous men — those who could best defend and hunt for their families, who were provided with the best weapons and possessed the most property, such as a large number of dogs or other animals,

— would succeed in rearing a greater average number of offspring than the weaker and poorer members of the same tribes. There can also be no doubt that such men would generally be able to select the more attractive women. At present the chiefs of nearly every tribe throughout the world succeed in obtaining more than one wife. I hear from Mr. Mantell, that until recently almost every girl in New Zealand, who was pretty or promised to be pretty, was *tapu* to some chief. With the Kafirs, as Mr. C. Hamilton states,[1] "the chiefs generally have the pick of the women for many miles round, and are most persevering in establishing or confirming their privilege." We have seen that each race has its own style of beauty, and we know that it is natural to man to admire each characteristic point in his domestic animals, dress, ornaments, and personal appearance, when carried a little beyond the average. If, then, the several foregoing propositions be admitted, — and I cannot see that they are doubtful, — it would be an inexplicable circumstance, if the selection of the more attractive women by the more powerful men of each tribe, who would rear on an average a greater number of children, did not after the lapse of many generations somewhat modify the character of the tribe.

When a foreign breed of our domestic animals is introduced into a new country, or when a native breed is long and carefully attended to, either for use or ornament, it is found after several generations to have undergone a greater or less amount of change, whenever the means of comparison exist. This follows from unconscious selection during a long series of generations — that is, the preservation of the most approved individuals — without any wish or expectation of such a result on the part of the breeder. So again, if during many years two careful breeders rear animals of the same family, and do not compare them together or with a common standard, the animals are found to have become, to the surprise of their owners, slightly different.[2] Each breeder has impressed, as Von Nathusius well expresses it,

[1] *Anthropological Review*, January, 1870, p. xvi.

[2] The Variation of Animals and Plants under Domestication, Vol. II, pp. 210–217.

the character of his own mind — his own taste and judgment — on his animals. What reason, then, can be assigned why similar results should not follow from the long-continued selection of the most admired women by those men of each tribe who were able to rear the greatest number of children? This would be unconscious selection, for an effect would be produced, independently of any wish or expectation on the part of the men who preferred certain women to others.

Let us suppose the members of a tribe, practicing some form of marriage, to spread over an unoccupied continent; they would soon split up into distinct hordes, separated from each other by various barriers, and still more effectually by the incessant wars between all barbarous nations. The hordes would thus be exposed to slightly different conditions and habits of life, and would sooner or later come to differ in some small degree. As soon as this occurred, each isolated tribe would form for itself a slightly different standard of beauty;[1] and then unconscious selection would come into action through the more powerful and leading men preferring certain women to others. Thus the differences between the tribes, at first very slight, would gradually and inevitably be more or less increased.

With animals in a state of nature, many characters proper to the males, such as size, strength, special weapons, courage, and pugnacity, have been acquired through the law of battle. The semihuman progenitors of man, like their allies the Quadrumana, will almost certainly have been thus modified; and as savages still fight for the possession of their women, a similar process of selection has probably gone on in a greater or less degree to the present day. Other characters proper to the males of the lower animals, such as bright colors and various ornaments, have been acquired by the more attractive males having been preferred by the females. There are, however, exceptional cases in which the males are the selectors, instead of having been the selected. We

[1] An ingenious writer argues, from a comparison of the pictures of Raphael, Rubens, and modern French artists, that the idea of beauty is not absolutely the same even throughout Europe. See the Lives of Haydn and Mozart, by Bombet (otherwise M. Beyle), English translation, p. 278.

recognize such cases by the females being more highly ornamented than the males, — their ornamental characters having been transmitted exclusively or chiefly to their female offspring. One such case has been described in the order to which man belongs, that of the rhesus monkey.

Man is more powerful in body and mind than woman, and in the savage state he keeps her in a far more abject state of bondage than does the male of any other animal; therefore it is not surprising that he should have gained the power of selection. Women are everywhere conscious of the value of their own beauty; and when they have the means, they take more delight in decorating themselves with all sorts of ornaments than do men. They borrow the plumes of male birds, with which nature has decked this sex in order to charm the females. As women have long been selected for beauty, it is not surprising that some of their successive variations should have been transmitted exclusively to the same sex; consequently that they should have transmitted beauty in a somewhat higher degree to their female than to their male offspring, and thus have become more beautiful, according to general opinion, than men. Women, however, certainly transmit most of their characters, including some beauty, to their offspring of both sexes, so that the continued preference by the men of each race for the more attractive women, according to their standard of taste, will have tended to modify in the same manner all the individuals of both sexes belonging to the race.

With respect to the other form of sexual selection (which with the lower animals is much the more common), namely, when the females are the selectors, and accept only those males which excite or charm them most, we have reason to believe that it formerly acted on our progenitors. Man in all probability owes his beard, and perhaps some other characters, to inheritance from an ancient progenitor who thus gained his ornaments. But this form of selection may have occasionally acted during later times; for in utterly barbarous tribes the women have more power in choosing, rejecting, and tempting their lovers, or of afterward changing their husbands, than might have been expected. As

this is a point of some importance, I will give in detail such evidence as I have collected.

Hearne describes how a woman in one of the tribes of Arctic America repeatedly ran away from her husband and joined her lover; and with the Charruas of South America, according to Azara, divorce is quite optional. Among the Abipones, a man on choosing a wife bargains with the parents about the price. But "it frequently happens that the girl rescinds what has been agreed upon between the parents and the bridegroom, obstinately rejecting the very mention of marriage." She often runs away, hides herself, and thus eludes the bridegroom. Captain Musters, who lived with the Patagonians, says that their marriages are always settled by inclination; "if the parents make a match contrary to the daughter's will, she refuses and is never compelled to comply." In Tierra del Fuego a young man first obtains the consent of the parents by doing them some service, and then he attempts to carry off the girl; "but if she is unwilling, she hides herself in the woods until her admirer is heartily tired of looking for her, and gives up the pursuit; but this seldom happens." In the Fiji Islands the man seizes on the woman whom he wishes for his wife by actual or pretended force; but "on reaching the home of her abductor, should she not approve of the match, she runs to some one who can protect her; if, however, she is satisfied, the matter is settled forthwith." With the Kalmucks there is a regular race between the bride and bridegroom, the former having a fair start; and Clarke "was assured that no instance occurs of a girl being caught, unless she has a partiality to the pursuer." Among the wild tribes of the Malay Archipelago there is also a racing match; and it appears from M. Bourien's account, as Sir J. Lubbock remarks, that "the race 'is not to the swift, nor the battle to the strong,' but to the young man who has the good fortune to please his intended bride." A similar custom, with the same result, prevails with the Koraks of north-eastern Asia.

Turning to Africa: the Kafirs buy their wives, and girls are severely beaten by their fathers if they will not accept a chosen husband; but it is manifest from many facts given by the Rev.

Mr. Shooter, that they have considerable power of choice. Thus, very ugly though rich men have been known to fail in getting wives. The girls, before consenting to be betrothed, compel the men to show themselves off first in front and then behind, and "exhibit their paces." They have been known to propose to a man, and they not rarely run away with a favored lover. So again, Mr. Leslie, who was intimately acquainted with the Kafirs, says, "It is a mistake to imagine that a girl is sold by her father in the same manner, and with the same authority, with which he would dispose of a cow." Among the degraded Bushmen of South Africa, "when a girl has grown up to womanhood without having been betrothed, which, however, does not often happen, her lover must gain her approbation, as well as that of the parents."[1] Mr. Winwood Reade made inquiries for me with respect to the negroes of western Africa, and he informs me that "the women, at least among the more intelligent pagan tribes, have no difficulty in getting the husbands whom they may desire, although it is considered unwomanly to ask a man to marry them. They are quite capable of falling in love, and of forming tender, passionate, and faithful attachments." Additional cases could be given.

We thus see that with savages the women are not in quite so abject a state in relation to marriage as has often been supposed. They can tempt the men whom they prefer, and can sometimes reject those whom they dislike, either before or after marriage. Preference on the part of the women, steadily acting in any one direction, would ultimately affect the character of the tribe; for the women would generally choose not merely the handsomest

[1] Azara, Voyages, etc., Tome II, p. 23. Dobrizhoffer, An Account of the Abipones, 1822, Vol. II, p. 207. Captain Musters, in *Proceedings Royal Geographical Society*, Vol. XV, p. 47. Williams on the Fiji Islanders, as quoted by Lubbock in Origin of Civilization, 1870, p. 79. On the Fuegians, see King and FitzRoy, Voyages of the *Adventure* and *Beagle*, 1839, Vol. II, p. 182. On the Kalmucks, quoted by M'Lennan in Primitive Marriage, 1865, p. 32. On the Malays, see Lubbock, *Origin of Civilization*, p. 76. The Rev. J. Shooter, On the Kafirs of Natal, 1857, pp. 52–60. Mr. D. Leslie, Kafir Character and Customs, 1871, p. 4. On the Bushmen, Burchell, Travels in South Africa, 1824, Vol. II, p. 59. On the Koraks by McKennan, as quoted by Mr. Wake, in *Anthropologia*, October, 1873, p. 75.

men, according to their standard of taste, but those who were at the same time best able to defend and support them. Such well-endowed pairs would commonly rear a larger number of offspring than the less favored. The same result would obviously follow in a still more marked manner, if there was selection on both sides; that is, if the more attractive and, at the same time, more powerful men were to prefer, and were preferred by, the more attractive women. And this double form of selection seems actually to have occurred, especially during the earlier periods of our long history.

We will now examine a little more closely some of the characters which distinguish the several races of man from one another and from the lower animals, namely, the greater or less deficiency of hair on the body, and the color of the skin. We need say nothing about the great diversity in the shape of the features and of the skull between the different races, as we have seen already how different is the standard of beauty in these respects. These characters will therefore probably have been acted on through sexual selection; but we have no means of judging whether they have been acted on chiefly from the male or female side. The musical faculties of man have likewise been already discussed.

Absence of Hair on the Body, and its Development on the Face and Head

From the presence of the woolly hair or lanugo on the human fœtus, and of rudimentary hairs scattered over the body during maturity, we may infer that man is descended from some animal which was born hairy and remained so during life. The loss of hair is an inconvenience and probably an injury to man, even in a hot climate, for he is thus exposed to the scorching of the sun, and to sudden chills, especially during wet weather. As Mr. Wallace remarks, the natives in all countries are glad to protect their naked backs and shoulders with some slight covering. No one supposes that the nakedness of the skin is any direct advantage to man; his body therefore cannot have been divested of

hair through natural selection.[1] Nor have we any evidence that this can be due to the direct action of climate, or that it is the result of correlated development.

The absence of hair on the body is to a certain extent a secondary sexual character; for in all parts of the world women are less hairy than men. Therefore we may reasonably suspect that this character has been gained through sexual selection. We know that the faces of several species of monkeys and large surfaces at the posterior end of the body of other species have been denuded of hair; and this we may safely attribute to sexual selection, for these surfaces are not only vividly colored but sometimes, as with the male mandrill and female rhesus, much more vividly in the one sex than in the other, especially during the breeding season. I am informed by Mr. Bartlett that, as these animals gradually reach maturity, the naked surfaces grow larger compared with the size of their bodies. The hair, however, appears to have been removed, not for the sake of nudity but that the color of the skin may be more fully displayed. So again with many birds, it appears as if the head and neck had been divested of feathers through sexual selection, to exhibit the brightly colored skin.

As the body in woman is less hairy than in man, and as this character is common to all races, we may conclude that it was our female semihuman ancestors who were first divested of hair, and that this occurred at an extremely remote period before the several races had diverged from a common stock. While our female ancestors were gradually acquiring this new character of nudity, they must have transmitted it almost equally to their offspring of both sexes while young, so that its transmission, as with the ornaments of many mammals and birds, has not been

[1] Contributions to the Theory of Natural Selection, 1870, p. 346. Mr. Wallace believes (p. 350) "that some intelligent power has guided or determined the development of man"; and he considers the hairless condition of the skin as coming under this head. The Rev. T. R. Stebbing, in commenting on this view (*Transactions of Devonshire Association for Science*, 1870), remarks that had Mr. Wallace "employed his usual ingenuity on the question of man's hairless skin, he might have seen the possibility of its selection through its superior beauty or the health attaching to superior cleanliness."

limited either by sex or age. There is nothing surprising in a partial loss of hair having been esteemed as an ornament by our apelike progenitors, for we have seen that innumerable strange characters have been thus esteemed by animals of all kinds, and have consequently been gained through sexual selection. Nor is it surprising that a slightly injurious character should have been thus acquired; for we know that this is the case with the plumes of certain birds, and with the horns of certain stags.

The females of some of the anthropoid apes are somewhat less hairy on the under surface than the males; and here we have what might have afforded a commencement for the process of denudation. With respect to the completion of the process through sexual selection, it is well to bear in mind the New Zealand proverb, "There is no woman for a hairy man." All who have seen photographs of the Siamese hairy family will admit how ludicrously hideous is the opposite extreme of excessive hairiness. And the king of Siam had to bribe a man to marry the first hairy woman in the family; and she transmitted this character to her young offspring of both sexes.[1]

Some races are much more hairy than others, especially the males; but it must not be assumed that the more hairy races, such as the European, have retained their primordial condition more completely than the naked races, such as the Kalmucks or Americans. It is more probable that the hairiness of the former is due to partial reversion; for characters which have been at some former period long inherited are always apt to return. We have seen that idiots are often very hairy, and they are apt to revert in other characters to a lower animal type. It does not appear that a cold climate has been influential in leading to this kind of reversion, excepting perhaps with the negroes, who have been reared during several generations in the United States,[2] and possibly with the Ainos, who inhabit the northern islands of

[1] The Variation of Animals and Plants under Domestication, 1868, Vol. II, p. 327.

[2] Investigations into Military and Anthropological Statistics of American Soldiers, by B. A. Gould, 1869, p. 568: Observations were carefully made on the hairiness of 2129 black and colored soldiers while they were bathing; and by