# EVOLUTION

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Evolution by Patrick Geddes & J. Arthur Thomson



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# INTRODUCTION

DESPITE the many and wide differences so obvious in every community—of age and sex, of regional origins and historic groupings, of occupations and interests, of experience and intelligence, efficiency and originality, of education, manners and morals, of wealth and rank, and so on—each generation has more in common than its individuals may realize. Layman and cleric, pressman and prime minister, message-boy and millionaire respond not merely to their respective call-bells, nor in common to the peal of general rejoicing, to the tolling of sorrow; but through their minds there vibrates also a certain unison, a response, though it may be more or less unconscious, to the key-notes of their age. How this unison underlies the apparent differences is easily seen on differing intellectual levels. The boy in the train buys *Tit-Bits*, but the man in the villa takes in the new *Britannica;* the specialist concentrates upon the "Proceedings" of his learned society, while the university principal reviews his "Calendar" of all the studies: so far they seem widely apart. But, after all, their differences are only of degree and not of kind;

all four are children of the recent and passing phase of knowledge, characterized by the encyclopædia—whether in "articles" or in "papers," in lecture-courses or in snippets from them—all is but a question of magnitude, a matter of detail. All four readers alike are interested in knowledge of one sort or another; but these are seen mainly as knowledges, and as advancing analyses, rather than as a growing synthesis. So, though they all read very different newspapers, these newspapers are yet much the same, all vividly retrospective of yesterday, and keenly criticizing such and such of its doings, but as yet with little sight of how the day's items are resultants of far distant yesterdays, sowings for far distant morrows. Yet ideas of unity amid diversity, of order amid change, have also long been growing, even finding expression, and this not merely, as sporadically in all ages, in impressions and speculations on decline or on better things; but in clearer and more comprehensive surveys of the processes of change, even inquiries into its method. These, in fact, have gone towards making up that general idea we now more or less share, of the universe as not only orderly, but in process of change. Changing order, orderly change, and this everywhere —in nature inorganic and organic, in indi-

vidual and in social life—for this vast conception, now everywhere diffusing, often expressed, rarely as yet applied, we need some general term—and this is Evolution.

Now, if this be gaining ground as a conception of the world-process, it is time to be inquiring farther into it: how is this to be done? On one hand historically, thus quickly appropriating the best thought as yet reached by others; on the other hand directly, at first hand and for oneself, in our own environment of life and work and contact with nature. In the former way we shall save time, and in the latter gain definiteness; hence impartially deciding on both, we may most speedily turn for our outlines to our encyclopædia, say Chambers' articles "Evolution" and "Darwinian Theory"; and for direct experience take a holiday in the woods or by the shore. At first the general ideas of our reading, the details of our field-observing, may seem to have little in common, like the old philosopher and the boy collector among our acquaintances: but gradually they come together: orderly change in general, changing order amid particulars, are more and more seen to be at one: thus we become evolutionists. We hear of boy collectors becoming old philosophers, yet remaining boy collectors still: Darwin above all. Among his foremost

fellows, Wallace, Haeckel, Hooker are still with us; and later ones in increasing number. Observing and thinking, thinking and observing; outdoor and indoor, and outdoor again; that is a game at which we all can play; with education and evolution alike mingled in its process and in its winning.

Evolution in astronomy, from Kant to Lockyer; evolution in chemistry and physics, from Lucretius to the alchemists, and thence to Ramsay and his fellow-alchemists of to-day; evolution in geology, from Leonardo and Palissy to Lyell and Darwin and onwards — all these large retrospects of the history of science are needed for a grasp of cosmic evolution. Their impetus, their methods too, have once and again impelled the student of organic nature towards evolutionary interpretations, and still do so; while the thought of the physicist and of the naturalist are increasingly of interest and suggestion towards the distinctively human and social studies.

Yet it was essentially in the very opposite way that modern evolution doctrines really originated; as a social theory, that of progress: and this generally diffused spirit of the later eighteenth century, and the earlier nineteenth, has both consciously and unconsciously stimulated naturalist and physicist towards their evolutionary inquiries and

doctrines. Of this social ferment of evolutionary thought there have been as yet two main phases; and first the French eighteenth century "Progress of Humanity," that characteristic doctrine of the Encyclopedists and Physiocrats, of Rousseau, and of the Revolution at its best, and this expressed for history by Condorcet, for living nature by Lamarck. The second phase is that of the Industrial Revolution in Britain, from Watt and Arkwright to Stephenson and Wheatstone; and thence to a nineteenth-century manufacturing and commercial world-predominance, proportionately culminating from 1851 to 1860 or thereby; with its characteristic "self-made men," its colonial expansion and growing empire.

It was the former period, with its theories of society and of morals, which gave birth to the "Doctrine of Evolution"; while the latter period, with its competitive industry, its resultant "population question," etc., has found its expression in the "Doctrine of Natural Selection." Each of these two great advances of thought is thus the philosophic epic of a great nation at its epoch; and Lamarck and Darwin are their representative prophets respectively.

In the generation after Darwin research was necessarily actively specialized in biology;