

Anniversary Address to the Geological Society, February, 1851.
By Sir Charles Lyell, President.
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In proportion as any branch of inquiry rises out of mere details into the higher generalizations which alone constitute Science, we find our scientific men, with rare exceptions, pitifully incompetent. Division of labour here, as elsewhere, seems to have narrowed their minds to petty segments, and rendered them incapable of embracing circles. All the sarcasms which Auguste Comte heaps upon the "men of specialities," are deserved. The man whose life is spent in making the pin's head, never rises into the philosophy of manufactures. Indeed, we say it without any sarcastic intention, all over Europe scientific men are for the most part Hodmen who mistake themselves for Architects. Because they amass "facts," they call themselves inductive philosophers; forgetting that "facts" are but stepping stones to philosophy,—forgetting that the object of knowledge is not facts, not even things, but processes,—laws,—causation.

Among the glaring instances of the poverty we allude to, the discussions elicited by the *Vestiges of Creation* are among the most recent and notorious. There are faults in that delightful work; errors both of fact and philosophy; but compared with the answers it provoked, we cannot help regarding it as a masterpiece. The history of that controversy will hereafter form an amusing chapter illustrative of the essentially superficial and unphilosophic training of our scientific men—if, indeed, greater proofs were needed than the immense reputation of two such mediocrities as Whewell and Sedgwick! In the opposition which the "development theory" has met with, there is unquestionably a considerably lessening of terrified Orthodoxy. We may pity the ineffectual struggles of Orthodoxy to keep a bold front against the irresistible march of science (the story of Galileo is incessantly repeated on a smaller scale), but we can understand the motive; our astonishment is, not that the Development Theory should be assailed, but that it should be assailed in so ludicrous and illogical a manner. To anticipate misconception we may add that the Theory laid down in the *Vestiges* appears to us inadmissible—even unphilosophical in one of its fundamental positions—the author not keeping distinctly in mind the cardinal fact that Organization is the resultant of two factors—the organism and the external conditions.

But we must not wander from our purpose, which is to draw attention to the triumphant demolition of Sir Charles Lyell's attack upon the doctrine of a gradual development in the scale of being, both animal and vegetable, from the earliest periods to our own time, by Professor Owen (the article can only be by him), in the last *Quarterly Review*. Lyell is a great name; and Geology owes much to him if Philosophy owes little. In a country like ours, where Authority is so weighty, the position of a man like Lyell in a question so important as that of development, is one to coerce attention. We cannot but rejoice that the refutation has appeared in a popular organ like the *Quarterly*, and not been hidden from the public in some scientific journal. The refutation is complete, and such as any one superficially acquainted with geology can easily apprehend. Not one word escapes the reviewer respecting the *Vestiges*. He confines himself to proving that, according to the present state of our geological knowledge, there has been a successive and progressive development—which is the position assailed by Lyell.

To us it appears that, owing to the want of precise notions about Life, geological induction is vitiated. Once supply the metaphysical conception of development in a chain of being according to some plan, by the more abstract and scientific conception of a law of progressive adaptation—once perceive that the existence of an organism implies the existence of such external conditions as must respond to it—must permit it to exist—and geological facts, however astounding, will range themselves quietly in the series, and in no way alter the truth of what is dimly set forth in the *Vestiges* of a progressive, advance from the simpler to the more complex forms of organization. Suppose the fossils of *Tragelodes*, or even of man, should be discovered in the tertiary formation, what would it prove? It would prove that the conditions to which human organisms are adapted were present in that epoch as well as in our own. It would prove that in the lightest degree affectation, viz., Nature uniformly

proceeds from the simple to the complex, from the more general to the more specific organization. No facts can invalidate a position so perfectly established as that; yet that, and that only, is the proposition underlying the theory of development. Geological discoveries may alter our views of the great lapses of time which occurred between the various stages of development; but they cannot alter the fundamental law of development, which is a process from the simple to the complex. Professor Owen shows that all the sound generalizations we have of geological facts point to the same conclusion:—

"All that we at present know of the vegetation of the globe, at the period of the earliest known fossiliferous deposits, is, that it was of that more simple or less developed kind which characterizes the tribes growing in the sea. No doubt the lowest strata which we have hitherto found happen to be marine; but it helps us very little forward in the solution of the great question of stationary or progressive creation, to suggest that the contemporaneous silurian land may very probably have been inhabited by plants more highly organized; because those plants may also, with some probability, have been lichens, mosses, ferns, or forms at least of a kindred grade of organization. We do not know what they were, and our hypotheses must wait until we do."

He alludes also to the indisputable fact that Cryptogamia, Phenogamia, Gymnosperms, and Dicotyledonous Angiosperms constitute a progressive series; and this series is precisely that in which our present collection of facts compels us to arrange the records of ancient vegetation. New facts may possibly be discovered to modify or subvert that order; but what philosopher rejects the generalization of actual facts in favour of some possibility that subversive facts may be one day discovered?

We have already indicated the Metaphysical (and consequently vicious) nature of the ordinary conception of the Development hypothesis, which treats organization as if it were in some sort independent of external conditions, and not the resultant of two factors—Life and Circumstance (to use broad familiar terms). The influence of that error may be traced in this sentence, which Lyell believes a crushing argument:—

"Pithily, in regard to the animal kingdom, the lowest silurian strata contain highly developed representatives of the three great divisions of radiata, articulates, and mollusca, showing that the marine invertebrate animals were as perfect then as in the existing seas."

The answer is so simple we are almost ashamed to make it: if the marine invertebrata which existed then, exist now, it only proves that the conditions to which those forms of life were adapted are still found in our seas; nothing more! Who ever disputed that Lyell's argument may be paralleled thus:—John Jones, the wealthy citizen, did not rise gradually to his opulence, because evidence exists that at the time of his greatest poverty he ate wheat bread of a quality as fine as that which he eats now with venison, stewed eels, and *pâte de foie gras*. If he eats bread now when he can command cake, it is because bread fulfils all the conditions he requires of it. On our planet there are conditions which suffice for the infinite varieties of life ranging from the plant up to man; but if we know anything of those conditions, we know that the conditions which will suffice for the lower will not suffice for the higher forms.

A word on the "question-begging phrase" of highly developed representatives: to talk of the high development of invertebrate animals is to throw dust in the eyes of the world; no invertebrate is highly developed, except in comparison with the rudimentary forms of animal life. Lyell makes use of the same question-begging language in this sentence:—

"In the carboniferous fauna there have been recently discovered several skeletons of reptiles of by no means low or simple organization."

Upon which Owen properly remarks:—"But no reptile has an organization that can properly be called simple or low—no fish even; for the vertebrate type is the highest of all. The question is—whether the carboniferous fauna has yielded any evidence of a reptile which presents a high and complex organization compared to the rest of its class." He further says:—

"Every fish and every reptile was doubtless as perfectly adapted to the circumstances under which it lived at the remotest of the geological periods, as any fish or reptile at the present day: in that respect it was as fully developed." Palæontology, however, has made us acquainted with different races of fishes in different formations, to which those races re-

spectively are peculiar, and of which they are consequently characteristic; and as those formations succeeded each other in point of time, so we infer that the different races of fishes were successively developed. But what Sir Charles Lyell appears to be contending for is, that the forms of animal life that succeeded each other did not differ in the grade of their organization; man, of course, always excepted.

"No doubt every fish is alike perfect in relation to its sphere of existence; but a gradation of complexity of organization is traceable throughout the class, as we now know it, and the lancelet and lamprey are, in this comparison, pronounced by naturalists to be inferior to, or less fully developed than, the tunny or the shark. There is, however, but a short range of gradation within the limits of this class as compared with that which extends from the fish to the mammal, or from the invertebrate to the vertebrate series; and in the class of fishes it is seen that when a species overpasses another in certain organs, as, e. g., in the brain or the parts of generation, the advance is usually counterbalanced by a less full development of some other system, as, e. g., the respiratory and osseous. In no shark or cæstracion, e. g., are the gills free, or is there any rudiment of the lungs, such as the air-bladder of most osseous fishes presents; and the lower grade of the skeleton of the sharks is indicated by the position in the so-called 'cartilaginous' order of fishes. When once the skeleton becomes ossified in the class of fishes, little, if anything, can be distinctly predicated of the grade of organization or of development of the fish, as such; in the rest of their organization they are much alike.

Probably, therefore, the conditions of the seas in which the primeval placoids and ganoids existed, were such as to dispense with that state of the backbone which is required at its highest stage of development. In relation to the circumstances in which they lived, palæozoic fishes were as perfect as their successors; but, in comparison with these successors, they were 'less fully developed,' and the state of their world may be inferred to have differed pro tanto from the state of ours. We cannot shut out this evidence of a different order of things. Not any of the arguments which Sir Charles Lyell has endeavoured to apply in explanation of the non-discovery of terrestrial mammalia in the marine strata of the old world will apply to the remains of sea fishes. Palæontology demonstrates that there has been, not only a successive development in this class, but, as regards their vertebrate skeleton, a progressive one."

Elsewhere summing up evidence, he says:—

"We cannot contrast the total absence of tertiary mammalia in the deposits of the palæozoic and secondary seas with the abundance of ganoid fishes in the same deposits, and the analogous abundance of marine cetacea with the total absence of imbricated ganoids in the seas of the present day, without the conviction that there must have been some difference in the conditions suited to animal life associated with such evidence of successive development."

Indeed, Sir Charles Lyell's obstinate persistence in his objection to the Development Theory is evidence of the force of prejudgments (we will not say prejudices) in determining convictions; but after the absurd attempts to reconcile Geology and Astronomy with Scripture nothing in that way is incredible. As a scientific question the root of the error lies, we believe, in the false conception of life. Professor Owen, who has a clearer conception of the essential functions of external conditions (and whose accurate extensive knowledge of geology we so gladly avail ourselves of, to give to our position an authority which our own very inadequate knowledge would disclaim), insists duly upon this aspect of the question. To those passages already quoted let us add this:—

"That the forms of animal life now are very different from what they were in the secondary and palæozoic periods, is shown not merely by the non-discovery of existing forms and classes in those ancient rocks, but by the non-existence now of the creatures that then lived in no mean numbers. The ingenious reasons assigned by Sir Charles to account for the non-discovery of mammals and birds in the Silurian and other less ancient marine formations do not apply to the non-discovery of *Megalichthys* and *Enaliosaurus* in the present seas. No naturalist dreams that the air-breathing ichthyosaurs still 'tempt the ocean,' and have only escaped notice by the slenderness of their snouts, which they are compelled to protrude to inhale the atmosphere. Their lungs and the decomposing flesh would have floated into view their dead bodies, which, like those of all existing air-breathing sea-monsters, would have been occasionally cast on shore. No event in natural history would create greater astonishment than the discovery of a living *Trilobite*, *Ammonite*, *Pterichthys*, or *Ichthyosaur*! And why? Because of the fixed, and, we will add, well-grounded conviction in the law of the successive development of animal forms on this planet. Did it never occur to Sir Charles that the absence of a mammal and a bird

in palaeozoic periods may be a phenomenon of the same order as the absence of palaeozoic forms in our present world?"

In conclusion, we should observe that while demolishing the arguments of Lyell against progressive development, Owen is not to be counted as an advocate of the form of the hypothesis set forth in the *Vestiges*—a form we ourselves regard as imperfect and too metaphysical. But the differences are reconcilable between all forms of the development hypothesis directly we substitute for it the more abstract and comprehensive formula of the Law of Progressive Adaptation.

PROUDHON ON GOVERNMENT.

16th Générals de la Révolution au XIX Siècle. Par P. J. Proudhon. W. Jeffs.

(Fourth Notice.)

Our survey of this powerful and interesting book now brings us to one of Proudhon's most startling positions—the absolute and unequivocal denial of all Government. Perhaps, after his famous onslaught upon Property, nothing equals in its audacity and destructive vehemence this negation of the principle of Authority. It is no new outburst. In his first Memoir on Property it is as emphatically announced as in this his last work. What he means by it we shall endeavour to show, if we can disengage his meaning from the envelope of polemical and dialectical subtleties.

There has been lately, in France, considerable discussion on the principles of Government—discussion which has resulted in angry separation of the republican party into opposite camps; Rittinghausen, Considérant, Ledru Rollin, and Girardin having been severally aiming at the destruction of representative government, and the erection of *Direct Legislation*—a scheme which Louis Blanc, in two pamphlets, *Plus de Girondins* and *La République Une et Indivisible*, has flagellated with vigour. Proudhon, after flagellating them, turns upon Louis Blanc, and is pitiless. Not only to them, but to the two great democratic idols, Rousseau and Robespierre, is Proudhon pitiless. Their admirers will read with indignation the fierce denunciations and sarcastic epithets Proudhon heaps upon the two tribuns; and their enemies will chuckle, especially at the Carlylian epithets applied to Robespierre, "the bastard of Loyola, and *tartufe de l'Être suprême!*" Take away from these pages the bilious vehemence of their polemic, and we may consider with profit their criticism of Rousseau's Social Contract and Robespierre's democratic tyranny.

Government under all its forms he attacks as false in principle and vicious in effect. He believes neither in Absolute Monarchy, in Constitutional Monarchy, nor in Democracy; he admits no Divine Right, no Legal Right, no Right of Majorities. He only believes in the Right of Justice—in the Empire of Reason. The principle of Authority he rejects in Politics as in Religion; he will admit only Liberty—Reason. The purest, sincerest form of Government is Absolutism—between that and Anarchy he sees only transitional compromises. Absolutism is the initiatory state of Humanity, the final state is Anarchy. We caution the reader against a natural misapprehension of the word Anarchy, which is not used as synonymous with disorder; but simply what the Greek word implies, viz., absence of Government—absolute Liberty.

Wherefore do all governments pretend to control the actions of men? To secure order. So completely is the idea of order connected with that of government, that anarchy irresistibly calls up the idea of disorder—the two become synonymes. "But," he asks, "what proves that the true order of society is that which pleases our governors to assign to us?" A question, indeed, which is implied in all political agitation. He answers it by saying, that true order must repose upon perfect Liberty, whereas Force (Government—Laws) is a perpetual negation of Liberty.

Universal Suffrage, or any other mode of Representation, he regards with pity. What! he exclaims, in a question of that which is nearest and dearest to me my liberty, my labour, the subsistence of my wife and children, I am to accept Representation in lieu of a direct compact! When I wish to form a contract, you interpose, and insist upon my electing arbiters, who, without knowing me, without hearing what I have to say, pronounce for or against me, and I must act as they determine, not as I determine! What is the relation between such a congress and me? What guarantee does it offer? Wherefore should I submit to its decisions respecting my interests? And when this congress after a wordy

debate, of which I understand no syllable, presents its decision in the shape of a law which it holds out to me on the point of a bayonet, I beg to know what becomes of my sovereignty if it be true that I am one of the sovereign people? Oh! I have elected honourable M.P.'s—the wisdom and probity of the Nation—the representatives of the Nation; and by so doing I have delegated my sovereignty. But why must these wise and honest gentlemen necessarily know more than I do myself what my own interest is? My labour, my subsistence, my whole activity, are to be settled according to their wisdom. If I am stupid enough not to see that they know better what is good for me than I know myself—there is the police and the County Gaol to enlighten me!

Hereupon follows a chapter on Universal Suffrage which Carlyle might have dictated. The conclusion is that neither the Divine right of bayonets, nor the wisdom of Delegates chosen by Universal Suffrage, can do anything more than impose Force upon Society—both are tyrannies which Liberty protests against.

There is much that is true, much also that is sophistical and confused, in Proudhon's attacks upon Government, especially where he directs them against the principle of all Government which he rightly names Authority. We hold it to be quite certain that Government, as external Coercion, will finally disappear. Herbert Spencer in his *Social Statics* has placed this point in so clear a light that we need only refer to his reasonings. But neither Herbert Spencer nor Proudhon take sufficient care to represent this condition as one indefinitely distant—as the goal of social development, not a condition practicable in our times; above all, neither Herbert Spencer nor Proudhon has with sufficient distinctness brought forward the internal Coercion (so to speak), the Spiritual Authority which will replace the external or purely Physical force of Governments. Both have seen this principle, but neither has given it sufficient emphasis.

To us it is incontestable that in the Governmental, as in the Religious question, the principle of Liberty, as commonly understood, is a destructive, vicious principle. Auguste Comte has luminously shown the anarchical nature of this pretended Liberty, while admitting its importance and absolute necessity as a destructive and transitional principle. He truly says that liberty of private judgment is absurd in astronomy or physics—no man is free to doubt their demonstrated truths, unless he aspire to the freedom of a lunatic asylum; and this omnipotence of the Authority of Reason in matters of Science will be accompanied by an equal omnipotence in matters of Social life, when Social life has its Science. The anarchy of Liberty is only the transition to Faith. No man rebels against the tyranny of Science—no man rejects the inward coercion of his convictions; but until that Faith is established, until the Empire of Reason is founded, the Empire of Force must prevail.

Proudhon had some glimmering of this when, in his first Memoir on Property, he said that the science of government belongs by right to one of the sections of the *Academy of the Sciences* of which the secretaries perpetual (President) becomes the prime minister; and inasmuch as every citizen may address a paper to that Academy, every citizen is a legislator; but as no one's opinion counts for more than it is worth, is only acceptable in as far as it is demonstrated, nobody can substitute his will in the place of Reason—no one is King.

But we are speaking of a future so distant, that "practical politicians" will impatiently shrug their shoulders. To them we will address a few words more immediate in their bearing.

That Government, like Religion, like Property, and some other "Sacred Institutions," has undergone throughout the slow march of History a gradual *disintegration*, is a position demonstrable to every open mind. That it is no longer the Power it once was is patent to every understanding. No longer do the Nations believe that, "If the King but knew what misery they suffered, he would remedy it;" no longer do they look to kings or kaisers for succour. Divine Right is so utterly discredited that the phrase which escaped Thiers at the foot of the tribune, "The King reigns, but does not govern," flew over Europe as the formula of the universal conviction. But if the King does not govern, who does? Have we, as Proudhon says, discredited Royalty to believe in the Royalty of the National Guard? And if we believe in them, upon what basis rests their authority?

The most important and far reaching change in

modern Europe is the change from a feudal and military condition to an *Industrial* condition. The Crystal Palace is our Agincourt and Waterloo! The rise of the Third Estate—the gigantic development of Commerce and Industry—have altered for ever the aspect of society. What a revolution is contained in that name—*A Cotton Lord!* a revolution beside which all the other revolutions that have agitated Europe, are but as the street quarrels of a few turbulent men: a Cotton Lord—a chief, a legislator, once himself, perhaps, a miserable drudge at the loom, now sent up from the mills of Lancashire to influence the destinies of the world!

It requires but a modicum of logic to perceive that in a society which has seen changes so vast, there must have been coextensive changes in the principles of Government; and these changes we sum up in the "Safeguards of our Constitution"—and we express them when we say the King reigns, but does not govern. The Government that is to come must be an *Organization of Industry*, precisely because the social state which we are approaching must be preëminently industrial.

The *Leader*, therefore, in advocating the principles it does, is only leading the age in the very direction which it has inevitably entered on. And when we protest against any of the Socialist schemes, as premature and incomplete, we do so because they seem to us to violate one of the essential conditions of the social problem, and ignore the existence of much of the old heaven. Society is assuredly Industrial and not Military, if we consider it in its dominant aspect; but the Industrial Phœnix is far from complete, universal; remnants of Feudalism, of Military feelings, thoughts, impulses, still powerfully operate, and find their expression in facts and institutions. These you cannot eradicate by a coup de main; these cannot be suppressed by an edict.

KNIGHT'S LAST SHAKSPERE.

The National Edition of Shakspeare. Comedies Vol II. Edited by Charles Knight. C. Knight and Co.

With Shakspeare, Goethe, and Comte, a thoughtful man has a magnificent library; there he may find food for endless meditation on humanity in all its complex and multiple manifestations, and on science in its encyclopaedical grandeur.

Probably Charles Knight, in his unwearied enthusiasm, would declare that Shakspeare was alone a library. No man has worked so incessantly, none half so effectively, to get Shakspeare a comfortable niche in every house. Pictorial editions have tempted the craving eye of many; library editions have graced the shelves of others; pocket editions and one volume editions have risen up to claim their separate usefulness; and here we have a sort of eclectic edition—the National Edition—uniting something of almost all the others. It is a book for the study or the drawing-room; but is too bulky for the portmanteau (an edition is announced for that purpose), and no pocket pretends to hold it. But on the table or desk it is handsome, useful, desirable. The text is printed across the page in fair type, not in double columns. The loving vigilance and erudite care with which that text is composed are known to all students. If we sometimes openly rebel against his emendations and new readings, we always feel that he is guided by the earnest desire to settle what Shakspeare actually wrote, and not by the poor desire of passing off his ingenuity; in other words, we are constrained to differ from him—but always with respect. The principles upon which his text is founded have our entire concurrence; but our poetical sense cannot be coerced by ten thousand manuscripts into accepting such a reading as Charles Knight has ventured on in King John. All the world knows and marvels at the sublime passage—

"Here I and Sorrow sit."

Here is my throne; bid Kings come bow to it." This without a word of explanation, but doubtless following the first folio, he prints:—

"Here I and sorrow sit!"

Thus not only introducing a hissing difficulty into the verse, but destroying the grand personification of Sorrow seated by the wretched Queen. But did Shakspeare write Sorrow? Is not sorrow the word he wrote? Nobody can decisively settle such a point; but poetic Justice insists upon the doubt being in favour of the author. Otherwise, what right have we to Theobald's glorious reading of Falstaff's babbling of green fields; or of that change from "dedicate her beauty to the sun" into

"And dedicate her beauty to the sun."