

the old Roman philosopher applies with singular point to all those conjectures of scientists, philosophers and exegetists, who fail to make their views a true reflex of the teachings of nature, *naturæ indicia*, or who promulgate theories manifestly antagonistic to the declarations of faith or of the Inspired Record.

A striking illustration of the unwisdom of committing one's self to premature notions, or unproved hypotheses, especially before all the evidence in the case is properly weighed, is afforded in the long and animated controversy respecting the authorship of the Pentateuch. Many reasons have been assigned by the higher critics why it could not have been the production of Moses, to whom it has so long been ascribed by a venerable tradition, and one of the objections urged against the Mosaic authorship was, that written language was unknown in the age during which the Jewish legislator is reputed to have lived. Now, however, the distinguished philologist and archæologist, Prof. Sayce, comes forward and proves, beyond doubt or quibble, that the contention of the higher critics respecting the authorship of the Bible is ill-founded. So sure, indeed, is he, whereof he speaks, that he does not hesitate to assert "not only that Moses *could* have written the Pentateuch, but that it would have been something like a miracle if he had not done so."

Even in Germany, the great stronghold of the Higher Criticism, we meet with the expression of similar views, and that, too, on the part of such noted Biblical scholars as Rupprecht, and Dr.

Adolph Zahn of Stuttgart. The former, as a result of his investigations, declares positively "that the Pentateuch dates back to the Mosaic period of Divine revelation, and that its author is Moses himself, the greatest prophet in Israel." And as to the groundless assertion that writing was unknown at the time of the Hebrew law-giver, we have the deliberate statement of Sayce that "Canaan, in the Mosaic age, like the countries which surrounded it, was fully as literary as was Europe in the time of the Renaissance."¹

Such and similar instances of premature claims for unwarranted hypotheses, should teach us the wisdom of practicing a proper reserve in respect of them, and of suspending judgment until we can yield assent which is based on unimpeachable evidence. But this does not imply that we should go to the extreme of conservatism, or display a fanatical obstinacy in the assertion of traditional views which are demonstrably untenable. There is a broad reach between ultra-conservatism and reprehensible liberalism or arrogant temerity. In this golden mean

¹ See *The Contemporary Review*, pp. 480-481, for October, 1895. Cf., also, by the same author, *The Higher Criticism and the Verdict of the Monuments*, chapter II, and *Literature of the Old Testament* in "The People's Bible History," mentioned later. In the last-named contribution to Biblical lore, the erudite Oxford divine affirms, and without fear of contradiction, "that one of the first and most important results of the discoveries which have been pouring in upon us during the last few years, is the proof that Canaan was a land of readers and writers long before the Israelites entered it, and that the Mosaic age was one of high literary activity. So far as the use of writing is concerned, there is now no longer any reason for doubting that the earlier books of the Bible might have been contemporaneous with the events they profess to record."

there is ample field for research and speculation, without any danger on the one side of trenching on faith, or of putting a bar to intellectual progress on the other. The Fathers of the early Church and the Schoolmen of mediæval times, show us what liberty of thought the Catholic may enjoy in the discussion of all questions outside the domain of revealed truth.

I am not unaware of the fact that Evolution has had suspicion directed against it, and odium cast upon it, because of its materialistic implications and its long anti-Christian associations. I know it has been banned and tabooed because it has received the cordial *imprimatur* of the advocates of Agnosticism, and the special commendation of the defenders of Atheism; that it has long been identified with false systems of philosophy, and made to render yeoman service in countless onslaughts against religion and the Church, against morality and free-will, against God and His providential government of the universe. But this does not prove that Evolution is ill-founded or that it is destitute of all elements of truth. Far from it. It is because Evolution contains so large an element of truth, because it explains countless facts and phenomena which are explicable on no other theory, that it has met with such universal favor, and that it has proved such a powerful agency in the dissemination of error and in giving verisimilitude to the most damnable of doctrines. Such being the case, ours is the duty to withdraw the truth from its enforced and unnatural alliance, and to show that there is a sense in which

Evolution can be understood—in which it must be understood, if it repose on a rational basis—in which, far from contributing to the propagation of false views of nature and God, it is calculated to render invaluable aid in the cause of both science and religion. From being an agency for the promulgation of Monism, Materialism and Pantheism, it should be converted into a power which makes for righteousness and the exaltation of holy faith and undying truth.

It were puerile to imagine that religion has anything to fear from the advance of science, or from Evolution receiving all the prominence which the facts in its favor will justify. Science and religion, revelation and nature, mutually supplement one another, and it would be against the best interests of both religion and science to do aught that would divorce them, or prevent their remaining the close allies which Infinite Wisdom designed them to be. "Logically regarded, the advance of science, far from having weakened religion has immeasurably strengthened it." So wrote shortly before his death one who, during the best years of his life, was an ardent Darwinian and an avowed agnostic. And the same gifted votary of science declared, that "The teleology of revelation supplements that of nature, and so, to the spiritually minded man, they logically and mutually corroborate one another."¹

It behooves us to realize that in our age of doubt and intellectual confusion, when so many seek in the gloaming what is visible only in the effulgence of the

¹ "Thoughts on Religion," p. 179, by George Romanes.

midday sun, when the skeptic sees an interrogation point at the end of every proposition, and when uncertainty and mystery hover over so much we should like to know—it behooves us, I say, to realize, that we must have recourse to everything that is calculated to dispel the darkness with which we are surrounded, and to relieve the harrowing doubts with which so many of our fellow men are oppressed. But more than this. Important as it is for us to bear in mind that we live in an age of doubt and disquietude, it is none the less important for us not to lose sight of the fact that our lot is cast in an age of dissent and conflict.

Religion is assailed on all sides; principles we hold most dear are treated with contumely and scorn, and the very foundations of belief in a personal Creator, and in the immortality of the soul, are systematically attacked by the enemies of God and His Church. If, then, we would accomplish anything in the conflict which is now raging so fiercely all around us, it is imperative that we should provide ourselves with the most approved means of attack and defense, and that we should be able not only to guard the stronghold of the faith, but that we should likewise be equipped and ready to meet our enemies out in the open. In these days of Maxim guns, old worn-out blunderbusses are worse than useless. To attempt to cope with the modern spirit of error by means of antiquated and discarded weapons of offense and defense, were as foolish as to pit a Roman trireme or a mediæval galley against a modern steel cruiser or the latest type of battleship.

To pass from the language of metaphor to language simple and unadorned, our great, or more truthfully our greatest enemy, in the intellectual world to-day, is Naturalism—variously known as Agnosticism, Positivism, Empiricism—which, as Mr. Balfour well observes, “is in reality the only system which ultimately profits by any defeats which theology may sustain, or which may be counted on to flood the spaces from which the tide of religion has receded.”¹

It is Naturalism that, allying itself with Evolution, or some of the many theories of Evolution which have attracted such widespread attention during the last half century, has counted such a formidable following that the friends of religion and Scripture might well despair of final victory, did they not know the invincibility of truth, and that, however it may be obscured for a time, or however much it may apparently be weakened, it is sure to prevail and in the end issue from the contest triumphant.

In writing the present work I have ever had before my mind the words of wisdom of our Holy Father, Leo XIII, concerning the duty incumbent on all Catholics, to turn the discoveries of science into so many means of illuminating and corroborating the teachings of faith and the declarations of the Sacred Text. In public and in private, in season and out of season, in briefs, allocutions and encyclicals, he has constantly and strenuously urged a thorough study of science in all its branches. But nowhere does he insist more strongly on the profound study of

¹“The Foundations of Belief,” p. 6.

science, than in his two masterly encyclicals "Æterni Patris" and "Providentissimus Deus." In these noble utterances both the clergy and the laity are stimulated to take an active part in the contest which is everywhere so furious; "to repulse hostile assaults," and that, too, by "modern methods of attack," and by "turning the arms of a perverted science into weapons of defense."¹ He tells us that "a knowledge of natural science will be of very great assistance in detecting attacks on the Sacred Books and in refuting them." For "attacks of this kind," the venerable Pontiff remarks, "bearing as they do on matters of sensible experience, are peculiarly dangerous both to the masses and also to the young who are beginning their literary studies."

In reading these precious documents one would almost think that the Holy Father had in mind the manifold materialistic hypotheses, so dangerous to the faith of the uninstructed, which have grouped themselves around the much-abused theory of contemporary Evolution. For, is it not a matter of daily observation and experience, that there is an increasing number of pious but timid souls who are sorely distressed by doubts which have been occasioned by the current theories of Transformism? They imagine, because it is continually dinned into

¹"Quoniam igitur tantum ii possunt religioni importare commodi, quibus cum catholicæ professionis gratia felicem indolem ingenii benignum numen impertiit; ideo in hac acerrima agitatione studiorum, quæ Scripturas quoquo modo attingunt, aptum sibi quisque eligant studii genus, in quo aliquando excellentes obiecta in illas improbæ scientiæ tela, non sine gloria, repellant." From the encyclical "Providentissimus Deus."

their ears, that there is a mortal antagonism between the principles of faith and the teachings of Evolution. They are assured, moreover, not only that such an antagonism actually exists, but also that it is based on undeniable facts, on absolute demonstration. They are told that if they wish to be consistent, if they wish to obey the certain behests of reason, they must choose between Evolution and faith, between science and superstition. The result is, too often, alas! that they make shipwreck of their faith, and plunge headlong into the dark and hopeless errors of Naturalism.

But not only have I been ever mindful of the teachings of the venerable Pontiff, Leo XIII; I have also, to the best of my ability, striven to follow the path marked out by those great masters of Catholic philosophy and theology, St. Augustine and St. Thomas of Aquin. I have always had before me their declarations respecting creation, and the manner in which we may conceive the world to have been evolved from its pristine chaotic condition to its present state of order and loveliness. And to make my task easier, I have had frequent recourse to those two modern luminaries of science and faith, the profound Jesuit, Father Harper, and the eminent Dominican, Cardinal Gonzales. To the "Metaphysics of the School," by the former, and to "La Biblia y la Ciencia," by the latter, I am specially indebted for information and points of view that it would be difficult to find elsewhere. Both of these distinguished scholars evince a rare mastery of the subjects which they discuss with such lucidity, and

one may safely follow them with the utmost confidence, and with the full assurance that ample justice will always be done to the claims of both science and Dogma.

In the present work I have studiously avoided everything that could justly be construed as an exaggeration of the results achieved by science, or as a minimizing of the dogmatic teachings of the Church of God. I have endeavored to present Catholic doctrines and scientific tenets in their true light, and to exhibit the mutual relations of one to the other in the fairest possible manner. Purely *ex parte* statements and special pleadings are alien from a professedly didactic work, and hence my constant effort has been to avoid all bias, to present impartially and dispassionately both sides of controverted questions, and to favor only such conclusions as seemed to be warranted by indisputable evidence.

The Church is committed to no theory as to the origin of the world or its inhabitants. Hence, as a Catholic, I am bound to no theory of Evolution or of special creation, except in so far as there may be positive evidence in behalf of such theory. As a man of science I must estimate, as everyone else must estimate, the merits or demerits of any hypothesis respecting the genesis and development of the divers forms of life, simply and solely by the arguments which can be advanced in its support. I have no prepossessions for Evolution; nor have I any prejudice against special creation. If it can be demonstrated that Evolution is the *modus creandi* which the Almighty has been pleased to adopt, I

shall rejoice that one of the greatest of the world-problems has at length received a solution. If, on the other hand, it can be shown that the traditional view of special creation is the one to which we must give our adhesion, I shall rejoice equally, for the sole desire of every student of nature, as well as the sole desire of every son of the Church, should be the truth, and the truth whole and undefiled.

I have, then, no pet theory to exploit, nothing sensational to defend, nothing to uphold that is inconsistent with the strictest orthodoxy or the most rigid Ultramontanism. My sole aim and purpose in writing this work has been, I repeat it, to remove misconceptions, to dispel confusion, to explain difficulties, to expose error, to eliminate false interpretation, to allay doubt, to quiet conscience, to benefit souls. How far I have succeeded remains for others to judge. That in the discussion of so many difficult and delicate questions, I may have made statements that could be improved, or should be somewhat modified, is quite possible. But if, in anything, I have been wanting in accuracy of expression; if I have misstated a fact of science, or misapprehended a Dogma of faith; I shall consider it a special favor to have my attention directed to what, on my part, is wholly an unintentional error.

It will not do to say, as has been said, that the discussion, whether from the platform or elsewhere, of such topics as constitute the main feature of this work, is inopportune or inexpedient. If the reasons already assigned did not suffice to justify the expediency and opportuneness of such discussions,

the example given by the International Catholic Scientific Congress ought to dispel all doubts that might be still entertained on the subject. For on every occasion the Congress has yet assembled, the discussion of evolutionary topics has been given special prominence. And the interest exhibited in such discussions was not confined to laymen and specialists, but it was shared in by distinguished prelates and scholars of international reputation. They recognized the necessity of having all possible light on a question of such widespread interest; of seeking by all possible means to attain the truth respecting a subject which has been so prolific of error and has proved such an agency for evil. What these learned and zealous men deemed it wise to do, in the cultured capitals of the Old World, we certainly can and ought to do in this land of ours, where ignorance of the subject in question is more dense and where knowledge is more needed. The fact that certain propositions in this work have given rise to such misunderstandings, and have led to such misdirected controversy and such useless logomachy as have prevailed during some months past, is the best evidence that there is yet much to be learned regarding what is so often incontinently condemned without a hearing.

The great trouble now, as it has always been, is the very general ignorance of the elench on the part of those who pose as critics of Evolution and of evolutionary theories. Without a sufficient knowledge of the facts they venture to discuss, they are often led to make statements which a wider acquaintance with

nature compels them to retract. Evolution, however, has not fared differently from the other grand generalizations that now constitute the foundations and pillars which support the noble and imposing edifice of science. The Copernican theory, it will be remembered, was denounced as anti-Scriptural; Newton's discovery of universal gravitation was condemned as atheistic; while the researches of geologists were decried as leading to infidelity, and as being "an awful evasion of the testimony of Revelation." That the theory of Evolution should be obliged to pass through the same ordeal as awaited other attempts at scientific progress, is not surprising to those who are familiar with the history of science; but it is not a little strange that there are yet among us those who derive such little profit from the lessons of the past, and who still persist in the futile attempt to solve by metaphysics problems which, by their very nature, can be worked out only by the methods of induction.

Dr. Whewell, the erudite author of the "History of the Inductive Sciences," was wont to declare that every great discovery in science had to pass through three stages. "First people said, 'It is absurd!' then they said, 'It is contrary to the Bible!' and finally they said, 'We always knew it was so!'" The truth of this observation of the famous Master of Trinity is well exemplified in the case of Evolution. There are some who still denounce it as contrary to reason; there are others who honestly believe that it contradicts Scripture; while there are not a few, and the number is rapidly augmenting, who are

convinced that the germs of the Evolution theory are to be found in Genesis, and that its fundamental principles were recognized by Aristotle, St. Augustine and St. Thomas of Aquin. The final result of the controversy belongs to the future. If the theory which has excited such animosity, and provoked such unbridled disputes, be founded on the facts of nature, it will ultimately prevail, as truth itself will prevail in the end; if, however, it repose only on assumption and unsupported hypotheses, if it have no better foundation than a shifting reef, it is doomed, sooner or later, to the fate which awaits everything that is unwarranted by nature or is at variance with truth.

Strange as it may appear, there are still some well-meaning people who foolishly imagine, that science, when too profoundly studied, is a source of danger to faith. Such a notion is so silly as scarcely to deserve mention. Pope's well-known verse: "A little learning is a dangerous thing," has its application here, as in so many other instances. The familiar quotation from Bacon: "A little philosophy inclineth a man's mind to Atheism, but depth in philosophy bringeth men's minds about to religion," expresses a truth which holds good for science as well as for philosophy. Illustrations of the truth of the second part of this statement are found in the lives of Copernicus, Galileo, Kepler, Linnæus, Newton, Cuvier, Cauchy, Agassiz, Barrande, Leverrier and numberless others of the world's most illustrious discoverers and most profound thinkers. The great Linnæus, than whom no one ever studied nature

more carefully or deeply, saw in all created things, even in what was apparently the most insignificant, evidences of the power and wisdom and goodness of God, which to him were simply overwhelming.¹ And the immortal Pasteur, whose recent death a whole world mourns, whose exhaustive study of nature has been a subject of universal comment and admiration, did not hesitate towards the end of his glorious career to declare, that careful and profound study inspires in one the deepest and the most childlike faith, a faith like unto that of a people who are proverbial for the earnestness and simplicity of their religious spirit, the faith of the pious and unspoiled inhabitants of Catholic Brittany.²

In one of his sublime *pensées*, Pascal, applying the method of Descartes to the demonstration of faith, and causing this instrument of science to confound all false science, declares that "we must begin by showing that religion is not contrary to reason; then that it is venerable, to give respect for it; then to make it lovable, and to make good men hope that it is true; then to show that it is true."³ Some-

¹ In the introduction to his "Systema Naturæ," the Swedish botanist writes: "Deum sempiternum, immensum, omniscientem, omnipotentem, expergefactus a tergo transeuntem vidi et obstupui. Legi aliquot ejus vestigia per creata rerum, in quibus omnibus, etiam in minimis ut fere nullis, quæ vis! quanta sapientia! quam inextricabilis perfectio!"

² "Quand on a bien étudié," the renowned savant avers, "on revient à la foi du paysan breton. Si j'avais étudié plus encore, j'aurais la foi de la paysanne bretonne."

³ "Il faut commencer par montrer, que la religion n'est point contraire à la raison; ensuite qu'elle est vénérable, en donner respect; la rendre ensuite aimable, faire souhaiter aux bons qu'elle fût vraie; et puis, montrer qu'elle est vraie."

thing akin to the idea contained in this beautiful passage, has been uppermost in my mind in the penning of the following pages. A kindred thought has been dominant in every topic discussed. It has given me courage to undertake, and strength to complete, a work which otherwise would never have been attempted, and which, during the whole course of its preparation, I would fain have seen intrusted to more competent hands. My sole, my ardent desire, has been to show that there is nothing in true science, nothing in any of the theories duly accredited by science and warranted by the facts of nature, nothing in Evolution, when properly understood, which is contrary to Scripture or Catholic teaching; that, on the contrary, when viewed in the light of Christian philosophy and theology, there is much in Evolution to admire, much that is ennobling and inspiring, much that illustrates and corroborates the truths of faith, much that may be made ancillary to revelation and religion, much that throws new light on the mysteries of creation, much that unifies and coördinates what were otherwise disconnected and disparate, much that exalts our ideas of creative power and wisdom and love, much, in fine, that makes the whole circle of the sciences tend, as never before, *ad majorem Dei gloriam*.

PART I.

EVOLUTION, PAST AND PRESENT.

CHAPTER I.

NATURE AND SCOPE OF EVOLUTION.

Early Speculation Regarding Nature and Man.

FROM time immemorial philosophers and students of nature have exhibited a special interest in all questions pertaining to the origin of man, of the earth on which he lives and of the universe to which he belongs. The earliest speculations of our Aryan forefathers were about the beginnings of things. Questions of cosmology, as we learn from the tablets preserved in the great library of Assurbanipal in Nineveh, received their meed of attention from the sages of ancient Assyria and Babylonia. And long before Assyria, Babylonia and Chaldea had reached the zenith of their power, and before they had attained that intellectual eminence which so distinguished them among the nations of the ancient world, the peoples of Accad and Sumer had raised and discussed questions of geogony and cosmogony. They were a philosophical race, these old Accadians and Sumerians, and, as we learn from the records which are constantly being exhumed in Mesopotamia,