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ART. I.—EVOLUTION AND FAITH.

The Descent of Man, and Selection in Relation to Sex. By CHARLES DARWIN, M.A. 2 vols. London: Murray. 1871.

Contributions to the Theory of Natural Selection. By A. R. WALLACE. Second Edition. London: Macmillan. 1871.

L'Instinct; ses Rapports avec la Vie et avec l'Intelligence. Par HENRI JOLY. Paris: Thorin. 1870.

The Genesis of Species. By ST. GEORGE MIVART. London: Macmillan. 1871.

MR. CHARLES DARWIN is a writer whom it is difficult to answer, for two reasons. In the first place, he deals with such an enormous number of facts that a complete answer must be as voluminous as his own writings. Otherwise, if any of the facts are left unnoticed, his sophistry will always seem to have still a covert to lurk in. In the second place, he is one of those writers who implies far more than he proves, or even pretends to prove; and thus his arguments may be successfully met whilst his *animus* remains unaffected and the weight of his character as a man of learning is still as much as ever on the wrong side. And a man who has written a great book, which has been successful and has been widely circulated, invariably acquires a greater reputation than he deserves. His brilliant and striking theories, which he himself had announced as only probable or at least as not completely proved, are just the points that the general mind seizes hold of; and by dint of repeating them the majority of people come to regard them as settled things. Mr. Darwin's great theory is the evolution of all living beings by means of natural selection alone. He has not proved this; he does not pretend to have proved it; yet his own mental bias is so evident, and the reading world has talked about his theory so much, that in all probability most people will be very much surprised to hear us say so.

"The Descent of Man," which appeared in the spring of this year, is, in a certain sense, the crown of Mr. Darwin's labours.

Some eleven years ago, when the famous "Origin of Species" came before the world, a hint was given that "more important researches" were awaiting the naturalist in the distant future. "Psychology will be based upon a new foundation—that of the necessary acquirement of each mental power and capacity by gradation, Light also will be thrown on the origin of man and his history." (P. 577, *fifth edition.*) The new work purports to supply this light, and to establish this foundation. The conclusions at which the author arrives are somewhat as follows.

From the similarity of man to the lower animals in many points of structure and constitution, and especially in embryonic development, and also from the rudiments of parts and organs which he retains, and the reversions to which he is liable, Mr. Darwin has no doubt that man is descended from some less highly organized form. He even attempts a history of his evolution and a sketch of some of his ancestors. One of these was "a hairy quadruped, furnished with a tail and pointed ears, probably arboreal in its habits, and an inhabitant of the Old World."* Still further back, we have an ancient marsupial, himself developed from a reptile, who in his turn descended from a fish; until at length, in the dim obscurity of the past, we faintly picture to ourselves the first progenitor of all the vertebrata in a very imperfect "aquatic animal," of which perhaps the best idea will be given by the familiar tadpole. In regard to the difficulty of seeing how, in this theory, the intellectual powers of man can ever have taken their rise, Mr. Darwin considers that the mental powers of man differ from those of the higher animals, not in kind, but only in degree. Since, therefore, such powers, in all their various grades of development, would always be highly advantageous to their possessor, natural selection would account for their continued growth and improvement. As to the "more interesting and difficult problem" of the development of the moral qualities, he takes for granted that the foundation of morality lies in the "social instinct." The continued presence of the social instincts and of their derived emotions, such as love and sympathy, in conjunction with great mental activity, with the vivid impression of past events, and with the power of foresight, is sufficient, he thinks, to account for dissatisfaction with certain actions, and for a resolution to act differently for the future—in which resolution he places the essence of conscience. These are the main conclusions of the book; but although they are very completely argued out, and an immense array of facts is brought forward to support them, they do not represent the half of what the book contains. The greater portion of the two volumes is taken up with a discussion of "Sexual

* "Descent of Man," ii. p. 389.

Selection," chiefly as to its effects on difference of race in man. Although this is a subject that it is difficult to treat in any Review but a strictly scientific one, we are bound to say that, as far as we have noticed, Mr. Darwin handles it in a way that entirely strips it of all offensiveness. But as it has but little to do with the first part of the book, and is in fact a distinct essay, it will not be necessary for us to do more than occasionally allude to its arguments.

We are not disposed to attach too much importance to Mr. Darwin's speculations, considered from the point of view of Faith. It has been too hastily assumed that the "evolution" theory is a smashing assault upon orthodoxy that is carrying terror and confusion into the ranks of all believers in Revelation. It is nothing of the kind. We have no doubt that some of its advocates devoutly intend it to be all this. But the truth is, that as long as the scientific men confine themselves to their science, and do not set it to prove more than it is adequate to prove, Revelation remains just where it was. Meanwhile it must be admitted that, as Catholics, it is our duty to meet fairly such a question as this. It is a great pity that Mr. Darwin, or Mr. Darwin's friends, should pursue their valuable and original physical researches in a spirit that contemns, or at least ignores, revelation. But we cannot alter facts; and since certain questions are mooted, we must examine them and give them an answer, even if in order to do so we are obliged to draw lines where simple faith may not have hitherto made distinctions. We are quite aware—and this is another reason for our writing—that educated Catholics, who read what is written from day to day, feel the difficulty of taking up satisfactory views on the questions to which we refer, and whatever we can do towards assisting them will at least be welcome, even though it should prove insufficient. Besides, Catholic theology lives by growth, and in the designs of Providence nothing has stimulated its growth so much as the contradictions which in every age it has had to sustain. The truths of the Faith have been discussed in every century, and if they are discussed in the present it will not be less to their advantage than it has been. Their illustration and their development—the "species, forma, distinctio," of Vincent of Lerins—have been the duty and the glory of our fathers, and their children must continue the work. It need not be said that we write "under correction." There are at least one or two points of the present controversy on which authority has not had occasion to speak clearly; but if we make mistakes, our mistakes themselves, when they are pointed out, will ultimately lead to greater certainty and a wider development of truth.

Whilst not overrating the seriousness of the present state of the evolution theory, it is, of course, quite possible to make too little of it. It is, no doubt, not without grave importance in several

respects. It seems to contradict the fact of the distinction of matter and spirit; because the theory is, that all faculties whatsoever, in man as in the lower animals, have been evolved from one or a few primordial forms. It seems to deny the special and separate creation of the human soul, which is a point of Catholic faith. It appears to oppose the received opinion, that the living principles of the animal and vegetable kingdoms were likewise the result of distinct creative acts, and that the bodies of the first human pair were miraculously formed by God. Nay, there is but too much reason to be apprehensive that the greater number of its advocates have no adequate idea of the dogma of Creation itself, and that they think they are more than sufficiently respectful when they set down the notion of a Creator among the things that are "unknowable."

As far as we are aware, Mr. Darwin does not deny Creation or a Creator. Nay, he not unfrequently speaks of both the one and the other in terms of respect. Perhaps the most unfortunate passage in his writings is the very conclusion of his interesting work on "Domestication," in which he comes across the old difficulty of reconciling the idea of an omniscient and all-wise God with evil, and, in fact, with anything at all except an optimist universe.* With his characteristic weakness whenever he faces a metaphysical problem, Mr. Darwin here simply throws up his hands and shakes his head, and winds up his book with a sentence or two of "regretful" scepticism which might have been written by Voltaire, if Voltaire could have been dull and respectable. But, as he admits himself in the same place, this kind of speculation is "travelling beyond" his "proper province." And, in fact, in his "Origin of Species" he distinctly recognizes that his theory is not opposed to primordial creation, for he speaks (p. 579) of life "having been originally breathed by the Creator into a few forms or into one." But it is quite evident, from what has just been stated, that, like a good many more of our modern physiologists, he has never fully wrought out in his own mind what ideas are necessarily involved in the word "Creator"; and therefore it is no wonder that, whilst verbally admitting Creation, these writers, and Mr. Darwin amongst them, frequently stick fast in that most difficult of all the regions of metaphysics which is concerned with the possibility and the consequences of this all-important fact. We call the reader's attention to this, for it will help to explain some seeming contradictions. That the theory of Evolution itself is not opposed to Creation, we need not stop to show. It is quite possible that it may be opposed to the actual way in which Creation was brought about, as revealed in Holy Scripture; and this question we shall examine

* "Plants and Animals under Domestication," vol. ii. p. 431.

presently. But whether it be held that all existent living beings are evolved out of four or five distinct types, or even that they are growths out of one sole primordial substance, as Mr. Darwin is inclined to think, still those who hold either of these views may admit, and generally do admit, that the one substance, or the several types, were originally called out of nothing by the fiat of the Creator.*

When, however, we come to compare the Darwinian Evolution theory more in detail with Revelation and Christian Faith, we are forced, however unwillingly, to see that it contains points which no orthodox Christian can accept. There can be no doubt whatever in the mind of the most cursory reader of the new volumes on "Man," that their author holds the human soul to have been developed gradually from the powers or principles of animal life. Mr. Darwin does not often use the word "soul." Man, to him, is only a complex of faculties, emotions, or instincts. But, as we have said before, he professes to prove the probability, and even to explain the possibility, of the intellectual and moral powers having been a gradual growth out of blind instinct. He admits, indeed, that the greatest difficulty of his theory arises from man's intellect and morality; but he maintains that the mental powers of the higher animals are "the same *in kind* with those of mankind, though so different in degree." † He alludes in one place to immortality, and anticipates that many will find it hard to conceive how or when in the gradually ascending organic scale man became "an immortal being." This, he says, cannot possibly be determined; just as it cannot be determined in the case of any particular infant. ‡ It is impossible to consider this passage without concluding that he does not recognize the independent creation of the human soul, in the evolution either of the species or of the individual. It is well known that Professor Huxley agrees with Mr. Darwin in this matter, though his point of view is entirely different. In the article "On the Physical Basis of Life" he states, with greater precision of language than logical cogency, that his studies on "protoplasm" have driven him to the conclusion, "that our

* It is not to be supposed that we consider that modern physical science is satisfactory in its treatment of Creation; but we think we are right in saying that it generally admits the term, though often meaning very little by it. Perhaps the most curious example, in recent books, of an attempt to get rid of the idea, is that of Mr. Herbert Spencer ("First Principles," pp. 30 et seq.), in which he proves with great elaboration, following in the wake of Sir W. Hamilton and Dean Mansel, that no possible hypothesis as to the world's origin is even conceivable, because self-existence, self-creation, and creation by an external cause, are all alike outside the limits of the "thinkable."

† "Descent of Man," vol. ii. p. 390.

‡ *Ibid.*, vol. ii. p. 395.

thoughts are the expression of molecular changes in that matter of life" (protoplasm) "which is the source of our other vital phenomena."* It need not be said that there are many scientific writers of less name who loudly, and sometimes offensively, express their materialistic sympathies. On the other hand, Mr. Wallace, who, we venture to predict, will one day be recognized as a sounder philosopher than Mr. Darwin, has emphatically declared that no material element, no molecule, no number of such elements, even though infinite in number and combined in any degree of complexity, can have the slightest tendency to originate consciousness.† Professor Tyndall, in an address delivered at the Norwich meeting of the British Association, in 1868, spoke in striking words of the utter impossibility of passing, by any intellectual process, from the physical processes to the facts of consciousness.‡ If the passage to which we refer means anything, it seems to imply that science can never prove, or even hear of, any evolution or correlation between organism and mind. It is true, however, that Professor Tyndall has been accused, since he uttered those words, of being a materialist; and it must be confessed that if he is not a materialist, that is, even if he does not (as he says he does not) make out all force to be what the vulgar call "matter," yet he seems at least to do away with all difference, except difference of degree, between matter and spirit.§ And as to Mr. Wallace himself, it is not quite clear, from the elaborate paper which he contributed to the "Academy" on the appearance of Mr. Darwin's book on "Man," whether that book has not shaken his convictions on the subject of matter and mind. At any rate he has made no protest against what every Christian thinker, it would seem, should at once protest against, viz., the assertion that the soul of man is a mere development of the forces that have shaped the world and made the grass grow. Perhaps it did not require so many words to prove that the Darwinian Evolution theory, as explained by its author, denies the separate creation of the soul, and that his views are only too much in agreement with those of the greatest physical philosophers of the day. But it is as well that it should be clearly understood. That so-called science opposes a Christian dogma is, of course, serious, but it is not overwhelming; whilst to accept, to favour, to propagate such science, with hazy notions as to what its authors intend it to lead to, is to put our faith in danger.

The special creation of the soul of Adam is a dogma of Catholic

* "Lay Sermons," p. 138.

† "Contributions to the Theory of Natural Selection," p. 365.

‡ "Fragments of Science," p. 121.

§ P. 165, note.

Faith, and is accepted by most of those who profess to believe in the Holy Scriptures. It is of faith, moreover, that the origin of the human soul, in each individual of Adam's posterity, is not a mere metamorphosis or evolution of organic or inorganic forms of existence. There was a certain kind of *Generationism* (Traducianism, it has been called) which at one time prevailed to some extent in the Church, which has been revived in these latter times by certain German theologians, and which has never been formally condemned by a dogmatic decision. This theory holds that, just as body begets body, so soul begets soul. But it seems certain that this is opposed to the voice of the "ordinary magisterium" of the Church; and if so, of course it is contrary to Faith.* With regard to the soul of man, then, no evolution-theory can be held. Each human individual receives his soul, as Adam did, immediately from the "breath" of Almighty God.

The teaching of Faith is, therefore, clear with respect to man's soul. But it is more difficult to say what must, or must not, be said with respect to the formation of the bodies of our first parents, and also with respect to the "creative periods" which are alleged to be revealed in the first chapter of Genesis. On these heads there is no mistaking Mr. Darwin and those who are with him. Modestly as the author of "Natural Selection" speaks of his own labours, he does claim to have given a fatal blow to the commonly received doctrine, that each species was separately created. And he feels no remorse for what he has done. "When I view all beings," he says, "not as special creations, but as the lineal descendants of some few beings which lived long before the first bed of the Silurian system was deposited, they seem to me to become ennobled." † "There is grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms or into one; and that whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning, endless forms, most beautiful and most wonderful, have been, and are being, evolved." ‡ "Analogy would lead me . . . to the belief that all animals and plants are descended from some *one prototype*. But analogy may be a deceitful guide." § Thus we may briefly state Mr. Darwin's present views to be,—first, that a somewhat dubious analogy leads him to consider all organic nature to be descended from one primordial form; secondly, that he is

* We do not prove this point at length, because there is no probability that any one will deny it; but the proofs may be referred to in the pages of the "Civiltà Cattolica," Serie V., vols. ix. x.; especially in an article entitled *La Creazione dell' Anima umana e il Dogma cattolico*, vol. ix. p. 677.

† "Origin of Species," p. 578.

‡ P. 579.

§ P. 572.

convinced that all animals had at most only four or five progenitors, and plants an equal or lesser number; thirdly, that he has no doubt that man and some of the apes are co-descendants of the "extinct form," whose description we gave in his own words a page or two back. Of the nature of Mr. Darwin's arguments we say nothing here, as we shall have to consider them later on. What we wish to settle just now is, how far it is allowable on the part of a Catholic to assent to his conclusions.

There is nothing more curious in that important treatise by S. Augustine, which is called "De Genesi ad literam," than the certainty he seems to have, that very little indeed was known to him or to his contemporaries about the true literal interpretation of the mysterious record; and the fear that seems to haunt him, lest foolish believers arouse the infidel to scorn, by talking nonsense about the physical world and appealing to Moses to prove what they say. The Duke of Argyll has quoted* a remarkable passage from the "Confessions" (lib. xii. c. 31), in which the holy Doctor seems to assert the widest possible liberty of interpreting the book of Genesis. However interesting it might be to have a doctor of the fifth century a prophet of the future possibilities of science, it is to be feared that he was thinking, when he wrote the passage cited, rather how the sun and the moon are figures of the preachers of the Gospel, than how the sun and moon were made. But whatever we make of his words in the "Confessions," there can be no doubt as to what he says in the literal commentary on Genesis. He speaks of the obscurity of the divine revelations, and of the possibility of arriving at different conclusions as to their interpretation; and he warns us that, in taking up any particular line of interpretation, we must be ready to abandon it if, on discussion, truth be found to be against it.† Non-Christians, he says, often know a great deal about physical matters, by means of reason and experiment; and they know it so well as to be quite certain.‡ And he goes so far as to say that the great lesson or fruit of his own attempts at the interpretation of Genesis is, that he has taught himself not to take up any man's particular view when upholding the Faith against infidel scoffers; but that whenever they undoubtedly (*veracibus documentis*) prove anything to be a fact in physical nature, he considers it to be his duty to prove it

* "Primeval Man," p. 35.

† In nullam earum nos precipiti affirmatione ita projiciamus, ut si forte diligentius discussa veritas eam recte labefactaverit, corruiamus.—"De Gen. ad lit.," lib. i. cap. xviii.

‡ Plerumque accidat ut aliquid de terrâ de naturis animalium, fructum, lapidum atque hujusmodi cæteris, etiam non Christianus ita noverit, ut certissimâ ratione et experientiâ teneat.—Ibid., cap. xix.

not to be contrary to Scripture.* We must hold fast to "sound faith" and the "rule or canon of piety": but in matters which do not oppose Faith he advocates "discussion"; he is ready to trust "reason and experiment"; and all he requires is "veracious proof." And he sums up in one of his epigrammatic sentences, by a double warning, against the seductions of loquacious philosophy on the one hand, and against superstitious timidity on the other.† It is pleasing to go back to the fountain-head, and to seek the true spirit of Faith and science from the living waters of the great source of Western Theology.

The question, then, is, how far is it allowable to a Catholic to deny special creations after the first creation, and to deny the special formation of the body of Adam, or of Eve?

We begin with the question of special second creations. It appears, on the face of the sacred narrative, that after the creation of the world out of nothing, after, perhaps, long periods, during which it was shaped and fashioned by the laws of inorganic matter and by heat, there were created at separate periods first the plants, then the animals, both in their several species. Is it allowable, in spite of the text of Holy Scripture, to assert that all living beings, both plant and animal, sprang from one primordial form—or even to go so far as to say—what, however, Mr. Darwin does not say—that even this primordial organism is evolved out of the inorganic?

There is a controversy, now over and done with, which has not been without its fruit in the interpretation of the Mosaic account of the creation. No one now doubts that it is perfectly allowable to hold that the "six days" mentioned in the Sacred Record need not, as far as faith is concerned, be interpreted to be six ordinary solar days of twenty-four hours each.‡ The settlement of this point has given us two principal lessons. It has taught us, first of all, that the literal meaning of Holy Scripture does not always lie on the surface, or even in the sense that is popularly attached to the words of the text. It has thrown light, in the second place—and it is a most important lesson—on what is meant by the "unanimous consent of the Fathers," as applied to the interpretation of Scripture. Every one knows the famous declaration of the Council of Trent and of the Creed of Pope Pius IV., which forbids us to interpret the written word of God, "nisi juxta unanimum consensum Patrum." As to the "six days," there

* "De Gen. ad lit.," cap. xxi.

† Ut neque falsæ philosophiæ loquacitate seducamur, neque falsæ religionis superstitione terreamur.—*Ibid.*, cap. eodem.

‡ See the discussion of this point in "Cosmogonia naturale comparata col Genesi," by F. Pianciani, S. J. (Rome, 1862), *Introduzione*.

can be no doubt that the large majority of the Fathers consider them to be six ordinary days.* They are so "unanimous" that there really appears to be no Father of any name, except S. Augustine and perhaps Origen, who holds a different opinion.† But, for all that, they are not sufficiently "unanimous" to bind us to interpret the "days" in their sense. Either then the singular voice of a great Father like S. Augustine on the opposite side, as long as his opinion had not been formally condemned, was enough to make the question uncertain; ‡ or else (which at last is probably the true view) we must lay stress on the qualification actually expressed by the Council (Sess. IV.), limiting its restriction to "*res fidei et morum ad ædificationem doctrinæ Christianæ pertinentium.*" Now nothing most certainly has been defined in any Creed or document of the Church, with respect to the origin of species, or the question of second creations. At all events then it is well worthy of inquiry, whether the text of Genesis is so clearly and unanimously explained to mean second creations, that to reject that theory is to contravene the "*unanimes consensus Patrum.*"

It is well known, as we have already hinted, that there are two great Patristic schools of the interpretation of the first two chapters of Genesis. One is that of S. Augustine: the other is that which we may perhaps be allowed to call the school of S. Basil; for S. Ambrose follows S. Basil so closely, and S. Ambrose and S. Basil together have been so exclusively the storehouse from which following ages have drawn, that the name of the great Greek Doctor may well stand for all who do not follow S. Augustine. The school of S. Basil, then, hold views as to the Mosaic narrative of creation, which may be briefly enumerated under the following heads:—(1) It considers the "six days" to be ordinary days. (2) It asserts several distinct "creative periods"—periods separated by time from the first creation of inorganic elementary matter, and separated also by time from one another, but all occurring before the end of the sixth day. (3) The earth, that is the primordial elementary creation, spoken of in Gen. i. 1, had, when created, the power of producing organic life—but only in a certain sense, for (4) the earth had *not* this power, in another sense (and that, perhaps, a more important sense), but awaited (5) the Command, or Word, of God. This command, however, is not called, simply, creation, but is distinguished from the exercise of power implied in

* S. Basil, S. Ambrose, S. Chrysostom, S. John Damascene, S. Gregory the Great, Ven. Bede, and others.

† Petavius, "*De Opificio sex Dierum.*"

‡ *Si unus aut paucorum [Patrum] opinatio non fuit ab Ecclesiâ rejecta, tum plurimorum auctoritas quemadmodum diximus, nihil certum firmumque conficiet.*—Melchior Canus, "*De Locis Theol.*" lib. vii. cap. 3, n. 3.

the primary creation. For instance S. Ambrose constantly employs several parallel pairs of words to express the two kinds of operation; as "Primo fecit—postea venustavit;" "Creavisse—ornasse;" "Facere—componere." And this "secondary creation" is the commencement of the Laws of Nature; in fact, the very command of God becomes the Law of Nature, as that command successively brings forth each fresh department of things. (6.) Though this school is not perfectly unanimous as to what is the exact enumeration of the particular periods of creation—as to how many there were, and what was created in each—yet for the most part it follows closely the exact words of Holy Scripture, and considers that whenever the sacred writer says that God did anything, he implies that He did it immediately, or at least by the ministry of angels. Nevertheless they do admit that some things were created *in aliis*, that is, by the creation of other things which would naturally produce them. And hence it may be noticed at once that the question as to how many things were created, whether the "how many" has reference to departments, or to the number of genera in each department, is treated by this school as, *to some extent*, a matter of detail. But (7) they are agreed in holding that at least a great many of the organic genera did not come into existence by a gradual process of growth, as things do in the ordinary course of nature, but sprang up perfect, "suddenly," "quickly," "at once." "Imagine," says S. Basil, "the cold and sterile earth heaving, at that little word and that brief command, with the sudden throes of birth and breaking forth into fruitfulness, throwing aside her garb of mourning and casting around her that grand robe of joy, her own glorious vesture, as there burst from her bosom the myriad species of the plants." *

Here we have the spirit of the school to which we have given the name of S. Basil. And the authority of the view here detailed can be seen in the fact that it is adopted and defended by Suarez. † Whilst following S. Basil almost exactly in the several points mentioned above, Suarez explains himself on many of them more fully than his authorities had done. For instance, he defines the power, primarily bestowed upon the earth, of bringing forth life, to be mere potentiality—the "material" cause of the living being, as the scholastic phrase is—not by any means its proximate efficient cause. ‡ That is to say, life was in the power of the inorganic creation as much as the finished statue is in the power of the rude marble block, and no more. He is definite in his description of what the "word" or "command" of God was. It was a different

* S. Basil, Hom. V., on the "Hexæmeron," vol. i. p. 97 (Migne's ed.)

† "De Opere sex Dierum," tom. iii. (ed. Vives).

‡ *Ibid.*, lib. i. cap. xii. n. 13.

operation from creation proper, because it supposed the pre-existence of matter that could be transmuted; it was rather a change than a creation, yet a change of a much higher kind than any created agent could bring about;* it might be called "secondary creation";† it is, as it were, a mean between creation and strict generation, and is therefore sometimes called creation and sometimes generation.‡ He is quite clear that the principal genera of the organic kingdom came into existence suddenly and in adult perfection.§ It need hardly be added that both Suarez and the Patristic school of interpretation which he follows assume that species are immutable. "No lapse of time destroys the *idiomata* of animals," says S. Basil.|| And some theologians, who flourished a long long time before Mr. Darwin, here notice that fact of the sterility of hybrids, which is one of the chief difficulties in the way of the indefinite mutability of species which is postulated by the Darwinian theory of evolution.¶ Nevertheless it is to be observed that the gist of observations like this is rather that the species created by God Himself are not subject, on the whole, to degeneration, than that no new species can be formed, or even propagated, for the last two processes are sometimes expressly admitted.** The immutability of species is taken by this school (as indeed by most ancient writers of every school) as a simple evident fact, which it has never occurred to any one to deny. They set it down, and they undertake to find reasons for it, just as they set down that gold was generated by the sun. It is important to observe this, because there are two kinds of "unanimous consent of the Fathers" to be distinguished; one, when they *materially* agree—that is, simply say the same thing; the other, when they use words expressing their *formal* opinion that such a sense is the sense in which alone a given passage can safely be taken. Bearing this in mind, it is not too much to say that nearly the whole of the interpretation above ascribed to the school of S. Basil is merely material agreement. The only point on which there is formal consent seems to be that God made all things (in some way or other) out of original nothing. We put forward this view with diffidence, but it seems to us strongly probable. There is one argument that seems peremptory. There is no point of the whole interpretation on which the school is more unanimous than the point that the "six days" are natural, ordinary days; but it is granted, by universal consent, that

* "De Opere sex Dierum," lib. i. cap. x. n. 25.

† *Ibid.*, lib. iii. cap. n. 13.

‡ *Ibid.*, lib. i. cap. xii. n. 14.

§ *Ibid.*, lib. i. cap. vii. n. 15.

|| Hom. IX. on the "Hexæmeron," p. 190.

¶ See Gazzaniga, "De Opere sex Dierum," diss. II. cap. vii. n. 209.

** See Cornelius à Lapide, "Comm. in Genesim," ad cap. i. v. 8.

this mode of interpreting the sacred writer is not obligatory. Therefore, it appears to us that even if the school of S. Basil could be proved to represent the sense of the Church, there is not one of the points of its interpretation given above (with the exception named) that could be considered to be authoritative, precisely as being attested by the "consent of the Fathers."

But the truth of this last assertion appears still more evident when we turn to the consideration of the other great Patristic school—the school of S. Augustine. The holy Doctor has treated of the Mosaic narrative of creation in more than one of his works. He wrote two books on the spiritual and allegorical sense, against the Manichæans. He afterwards began a second treatise, intended to be a literal commentary, but this he has left imperfect. The spiritual commentary contained in the three last books of the Confessions came next; and finally he wrote the elaborate treatise "De Genesi ad literam," in twelve books, which is our chief source of reference on the present subject. No one can go through it without feeling the enormous difference there is between it and the "Hexæmeron" of S. Basil. The Greek Doctor writes rather for edification than for instruction: he explains, indeed, and he confutes, as occasion offers; but he raises no difficulties of his own, and his answers to heretics and gainsayers, if solid, are still the regular prescriptive answers of the pulpit; and he is glad to dismiss them and float once more into his broad current of eloquence, deep and abundant, with occasional reaches of sparkling rhetoric. But S. Augustine, in his commentary on the Mosaic narrative, is a philosopher of faith rather than a preacher of morals. He meets the objections of enemies, but his greatest difficulties are the product of his own thought. He ponders and reflects, he analyses and doubts, he returns again and again to what he has dismissed; and when he rises into eloquence, it is the eloquence of depth of thought, of earnestness, and of piercing intellect. The result of this difference between these two Saints is, that the reader feels the Latin to be earnestly facing intellectual difficulties, whilst the Greek is thinking of prayer and praise and holy living. Now the view of S. Augustine on the Six Days of Creation is very easily and briefly stated. (1) He held that the whole of what is detailed in the first chapter of Genesis came to pass at once, in one instant. The reason why the narrative is arranged in six distinct days is to assist the incapacity of those who are unable, without details, fully to take in what is meant by simultaneous creation.* (2) All things that were created were created at once, but not in their perfect or adult state; they were created in their *seminal* or *causal ratios*. There has been some hesitation expressed as to what S.

* "De Genesi ad lit.," lib. iv. cap. 23, n. 52.

Augustine means by these primordial innate principles out of which he asserts all things to have sprung. But there can be little doubt that he really intends to say that God, at the instant of creation, gave to the earth the power or capability of producing in due course the whole of the organic genera which it was afterwards to produce, and this without any further necessary action of Almighty God himself than that by which He co-operates in all the operations of second causes. Let it be observed, however, that he does not say that no miraculous or extraordinary and immediate action of God *has not at times* caused the development of plants or animals. But sudden, and therefore miraculous, development he does not consider to be the rule. We say that we think there can be little doubt this is S. Augustine's meaning. The *potentia* which he attributes to primordial creation is the "innate" efficiency of a real "cause." His often-repeated expressions of "seed" and "germ" mean the same thing. The only two kinds of Divine operation which he distinguishes are, first, that by which the Almighty wrought during "six days"—an instantaneous act, from which He rested on the seventh; and, secondly, that by which He continues to work "until now," that is, the ordinary course of His providence.* The "conditio" or first establishment, of the universe, was complete instantaneously; never since that instant has its Author created anything new (in material substance); He has only governed and directed its development (administravit); † "explicat sæcula," says S. Augustine, "quæ illi [creaturæ suæ sc.], cum primum condita est, tanquam plicata indiderat." ‡ And to remove all doubt, he compares the efficacy of the seminal and causal ratios innate in the world at its creation to the way in which there lies invisible in the grain of seed all that is afterwards to grow up to be a tree. §

But, it may be asked, can it be true then that S. Augustine actually admits that the earth, thus fecundated by Almighty power at its first creation, developed its organic life by degrees, and during long spaces of time? To this we answer that S. Augustine stops short just at this point. He certainly does not say so; and we believe that he had no conception of the existence of those long ages which modern geology has revealed. Yet just as certainly he does not deny it. There is one remarkable passage in which he almost seems to anticipate modern science. He asks himself || what kind of thing these "seminal ratios" were; were

* "De Genesi ad lit.," lib. iv. cap. 12, n. 28.

† *Ibid.*, lib. iv. cap. 12, n. 22.

‡ *Ibid.*, lib. v. cap. 20, n. 41.

§ *Ibid.*, lib. v. cap. 23, n. 45.

|| *Ibid.*, lib. vi. cap. 14, n. 25.

they such as passed through their varied intervals of time, each according to its kind, just as we see organisms do now? Or was it their nature to come to maturity *at once, without progressive growth, as is believed of Adam?* He answers; Why should we not believe that they had *both* these descriptions of nature?—so that what was afterwards done with them depended upon the good pleasure of their Maker. That is to say, they had the power to develop in the ordinary, gradual way; and they had likewise the power, if their Maker pleased, to develop suddenly and miraculously. But whether or no organisms did, as a rule, develop miraculously and suddenly, S. Augustine does not decide. It seems to us that he was hindered from saying they did by a feeling that there was no necessity for it; and yet he could not say they did not, because the idea of geological time did not occur, and could not have occurred, to him. But he uses certain expressions in speaking of development, such as “*per temporum moras,*” * “*per congruos temporum motus,*” † “*omnia suis quæque temporibus jam per sæculorum ordinem [fiunt]*” ‡ which might be adopted without alteration by an evolutionist. And it must be remembered that besides this process of development, which he expressly says is going on yet, he admits only one other species of operation of Almighty God, viz., the simultaneous primordial creation.

From this summary of the two chief schools of Patristic interpretation of Genesis, it seems clear enough, that, with respect to all organisms lower than man, Catholic faith does not prevent any one from holding the opinion that life, both vegetable and animal, was in the world, in germ, at its creation, and afterwards developed by regular process into all the various species now upon the earth. We do not by any means say this is the true opinion. It is certain that hardly one scientific man holds it in its whole extent; and Mr. Darwin himself does not pretend to have proved it. § And we do not admit that its proof altogether depends on physical science; there are other considerations, both metaphysical and moral, to be weighed. But it seems to us to be free at least from any suspicion of dogmatic heterodoxy.

There are no doubt very many who object, with a sort of objection which almost seems like a religious scruple, to think that life, whether vegetable or animal, could make its appearance in the

* “*De Genesi ad lit.*,” lib. v. cap. 23, n. 45.

† *Ibid.*, lib. v. cap. 5, n. 14.

‡ *Ibid.*, lib. vi. cap. 5, n. 8.

§ Mr. Darwin, indeed, does not profess to treat of the origin of life. “*Science as yet throws no light on the (far higher) problem of the essence or origin of life.*”—“*Origin of Species,*” p. 568. His endeavour is, taking life for granted, to prove that all living things have come, chiefly by a law which he calls “*natural selection,*” from, at most, a few primordial living types.

world without the immediate action of Almighty God. Perhaps they would not admit that such immediate action was *miraculous*; for they would say it is the commencement of a law of nature. Still, even if not technically a miracle, it would be, with reference to the order of things before it happened, quite as extraordinary an exercise of Divine power as the changing of water into wine at Cana. Now we do not by any means deny that such miraculous creation may actually have happened: human science will never prove it did not. But it certainly cannot be asserted that it is unorthodox to deny it; and this is all that we here assert. It is a point on which Revelation is silent, and on which philosophical arguments can only establish a probability; and it is a point, therefore, on which the arguments and discoveries of physical science may be, and ought to be, counted for what they are worth. We may even add—without positively declaring our approval of any particular system of development—that physical science, and especially what it tells us of geological time, seem to make it more probable than not that, even if we maintain that life was not evolved out of matter in which vital germs had been primordially created, yet the first creation of life was not a creation of a multitude of perfect species, but rather of rudimentary organizations which were left to develop chiefly by natural law.* Suarez has two rules or canons on this subject which seem remarkably applicable to a view that differs considerably from his own. His first is this (he is speaking particularly of the work of the “six days”): “Opera miraculosa vel extraordinaria absque necessitate vel sufficienti testimonio audienda non sunt;” † and the other is as follows: “Deus ea tantum immediate produxit, quæ nonnisi per Ipsius actionem in rerum naturâ introduci poterant quoad species suas.” ‡ These rules, which are found in almost identical words both in S. Augustine and in S. Thomas, should, it seems to us, have the widest possible application. God made all things; He governs and directs all things; He foresaw from all eternity the minutest change of all the millions of changes that have been and that will be, and they all happened because He willed. It is not in any way derogatory to these Catholic truths to hold that life-germs were created at the first instant of creation. Let it be noticed that this is not saying that the inorganic can, as such, develop into organism; although, as regards vegetable life, even this seems to be admitted as *possible* by Catholic philosophers.§ It seems to be

* Not, however, let it be observed, by natural selection only.

† “De Opere sex Dierum,” lib. ii. cap. vii.

‡ *Ibid.*, lib. ii. cap. x.

§ We refer particularly to F. Tongiorgi, S.J. He says, after denying that organs and organic bodies can be constructed by chemistry: Certè

proved that living organisms may exist in such minute forms in matter as not only to defy the microscope but even to resist disintegration by a heat of 150° Cent. ; being ready, after this fiery trial, to discover their existence by coalescing into masses that can at length be detected by the lens.* Now it is quite conceivable that these infinitesimally minute life-germs may have remained latent for many cycles of ages, until those conditions came about under which, by virtue of their divinely-established nature, they were able to coalesce and produce by gradual stages one living thing after another. S. Augustine might have had this very thought in his mind. There are numberless difficulties in the way of such a theory ; there is little or no direct proof of its truth ; but what we are at present concerned with is its admissibility. Once grant it to be a possible solution, and then physical science (assisted by metaphysics and authority in various details) may be left alone to prove it or disprove it. The most insuperable objection, from a metaphysical point of view, to a consistent theory of evolution, is no doubt the apparent impossibility of admitting that creatures capable of sensation, like the higher animals at least, could have come from vital germs whose sensibility, on such an hypothesis, must have been latent for an enormous lapse of time. It must be remembered, however, that though sensibility always supposes life, a living thing may be sensitive under some circumstances and non-sensitive, whilst still alive, under others ; so that it is possible that the germs of animal life, without sensibility, may have existed for any length of time, undeveloped, but fully capable of sensation under certain conditions, such as coalition in brains or ganglia. Those who maintain that the soul of sentient animals is a simple, immaterial substance, independent of the body as to being, hold, of course, that it is specially created in the case of each individual animal and insect ; † and development can present no difficulties to this theory. We may notice, however, that neither S. Basil, S. Augustine, nor S. Thomas had any notion that it was necessary to postulate the special creation of the soul of each animal. But the

si homo oculos haberet satis acutos ad atomos materiæ tam ponderabilis quam imponderabilis singillatim discernendas, manusque aptas ad atomos eandem prensandas ac disponendas juxta typum primum a Deo extractum, tunc, credo, posset homo plantas efficere." ("Institutiones Philosophiæ," vol. iii. p. 26.) The author intends this for a *reductio ad absurdum*. But if vegetable vitality is reducible to *arrangement*, why should such vitality be less a law of matter than crystallization is ? And why should not chemists, who can see and handle invisible molecules without eyes or hands, some day, whether by accident or otherwise, hit upon that peculiar arrangement of them which constitutes a cell ?

* See Dr. Bastian's experiments, "Nature," vol. ii. p. 170.

† F. Tongiorgi, S.J., "Instit. Phil.," vol. iii. p. 42.

settlement of such a question as this would depend upon a full analysis of what sensation is—sensation in the animals, be it observed, not in man, in whom its phenomena are difficult to discover pure.

No one can deny that the theory of Evolution (which Mr. Darwin was by no means the first to put forth, and about which very much remains to be discovered and discussed) is full of fertile views in natural science, and therefore also in theology and morality. The axiom "*Natura non facit saltum*" was well known in the ages of the Scholastics. And the more width of design and system the mind finds in the works of God, the more is its idea of Him exalted. It has been so always. It was so with the discovery of the antipodes, with the knowledge of the realms of the stars, with the laws of modern chemistry, and with the conception of the secular changes of the earth and its inhabitants. And it will be so, there is no doubt, with all that science has to tell us of the order of the vegetable and animal world, by means of those comparatively new researches in morphology, embryology, and heredity which are now advancing so rapidly. "*Infimum supremi attingit supremum infini.*" Aristotle saw that, as far as regards structure. It is perhaps reserved for our days to see it clearly in evolution also. The evolution of a tree from a seed is apparently a very different thing from the evolution of a tree from a lichen. But in the extent of change and in the absolute impossibility of following the steps of the process with the senses, it may serve as a parallel. And it seems to be well ascertained that the highest animals, and man also as to his body, grow up in the womb from a germ which does not differ, as far as can be seen, from the germ out of which every animal and plant is evolved; a germ which then grows to resemble that of a worm, then that of a reptile, then that of a mammal, passes afterwards through grades of resemblance to that of various divisions of the mammalia, then comes to be indistinguishable from those of the higher quadrumana, and finally, in the case of man, receives its differentiation as a human foetus. In this process we know, from Revelation and the practice of the Church, that the spiritual soul is infused before birth; but we have no revealed grounds for saying that any other soul was created or infused previously; we are therefore thrown upon science. It is the same, possibly, with the primordial evolution of life. The plant-germ has been transmuted into the animal-germ, and whether such power of evolution was primarily given to matter, or suddenly created for its work, a Catholic, as such, seems not to be called upon to decide.

It will be remembered that in beginning to speak of the development of life, we expressly excepted from our remarks the question of the evolution of the body of the first man. That question, therefore, now comes before us. Can we believe it possible that

the body of the first man was not formed instantaneously in full perfection, but that it was the result of ordinary natural laws? In other words, can we believe that the human body existed as an animal before it was informed by the rational soul? Let it be observed that the question is not about the instantaneous formation of *man*. There is not the slightest doubt that man became man in the instant that his spiritual soul was breathed into him,—no sooner and no later. But what was that into which the soul was breathed? Before inquiring into the teaching of tradition, it may be stated that only two hypotheses seem admissible on grounds of reason. Either the soul was breathed into a previously existing anthropomorphous animal, or else a special anthropomorphous body was instantaneously formed from pre-existent matter, and in the same instant was vivified by the soul. Two other suppositions need only be mentioned to be dismissed. To say that the body of the first man was created in an infant state, and *à fortiori*, to say it was created in an embryonic state, would require us to suppose not one miracle but a series of miracles; for miraculous conservation would have then been as necessary as miraculous procreation. In like manner to say that an anthropomorphous statue or *cadaver* was formed, by degrees or not, and that that time elapsed before it was animated by the soul, would also be a gratuitous assumption of the miraculous. We are left, therefore, it would seem, to choose between an instantaneous triple act, that is to say, the formation of the body, the creation of the soul, and their union, in one and the same instant, and on the other hand, the assumption by the soul of a previously developed animal.

There is no need to say that the whole school of Fathers which has been called the school of S. Basil, takes for granted that Adam's body was formed by the immediate act of God, in the same instant as the soul was breathed in. There are one or two indeed who seem to think that an appreciable time elapsed between the formation of the anthropomorphous "statue" and the vivification by the soul.* But this hypothesis we need not entertain, for, as has already been stated, it is more miraculous than its alternative; it is put forward by its authors more as a ground for moral teaching than as an interpretation, and, as opposing evolution, it is virtually the same as the opinion of the rest of the school of S. Basil. Confining our observations, therefore, to those who hold the first view, it is to be remarked that the whole of this school—which is nearly the same as saying the whole "traditio Patrum"—is unanimous in observing that Adam's creation is related in different words from that of all other things. And their words, in many instances, apply specifically to his body. S. Irenæus notices that Adam is

* For instance, S. John Chrysostom, Hom. XII. and XIII. on Genesis.

formed "by the hands of God."* Tertullian draws a contrast between God's "imperial word" in the case of other creatures, and His "familiar hand" in the case of man.† Others remark on the particular word "Formavit" or "Finxit" instead of "Fecit." S. Gregory the Great notices how man is "fashioned out of slime, as it were studiously" (*quasi per studium*).‡ Severianus of Gabala, a contemporary of S. John Chrysostom, has a suggestive passage, in which he observes that in the case of other living things God said, Let the earth bring forth, and body and soul came out together; but with man He made first the body and then the soul.§ No one will deny that the Fathers as a rule speak after this manner of Adam's body, and it may therefore be argued that whatever weight their authority lends to the opinion of the instantaneous creation of other living things, it lends more to a similar theory about Adam's body. At the same time it must be said that when the Fathers speak in these terms they are rather seeking to show the *dignity* of man than the precise point of the speciality of his body's creation.|| And they never use the word "immediate" or any equivalent; though it is true they deny the "ministry of angels." On the whole, what they do say may, it would seem, be reduced to this: God formed man, as to his body, in some special way, and with special intention, out of the slime of the earth. By the word "formed" it is suggested that the making of man's body was not a true creation out of nothing, but a fashioning out of pre-existent matter. As to the "special way" of this formation, except that it was instantaneous, nothing definite is to be found. And with regard to the material out of which the body was fashioned, viz., the slime, it is not expressly said that it was the immediate and proximate material; except for what is implied by the word *instantaneously*, it might have been merely the original and remote, just as it is in the case of men who are born in the ordinary way. And the great number of Scriptural and Patristic texts that allude to man's formation out of dust or slime, are all susceptible of interpretation in the sense of original or primordial matter; as is proved from the fact that many of the texts refer at once to Adam and to his posterity; now Adam's posterity are certainly not formed *immediately* out of slime or dust. It may here be observed, also, that from the Scriptural expression "dust" or "slime" the holy Fathers do not understand that no other substances entered into

* In Præfatione lib. iv.

† Lib. ii. contra Marcionem, cap. iv.

‡ Lib. ix. "Moralium," cap. 27.

§ Hom. V.

|| This is easily seen from a comparison of the passages in Petavius, "De Opere sex Dierum," lib. ii. cap. 1, nn. 4, 5, 6.

the composition of Adam's body. They admit that it is probably composed of all the elements, in various proportions; but that Moses, speaking with a special purpose and to an unenlightened people, thought it necessary to mention only the most obvious.

Let us now turn to S. Augustine. In accordance with his view that the work of the six days was simultaneous, he considers that a twofold creation of man is mentioned in Genesis; the first on the sixth day, when man, like everything else, was created in seminal ratio; the second (Gen. ii. 7) when, after a time, God "formed man of the slime of the earth." He also thinks that the evolution of Adam's body out of these causal ratios took place, not after the ordinary way of progressive growth, but "repente, in ætate perfectâ";* and he compares such a "formation" to the changing of the water into wine and the turning of the rod of Aaron into a serpent.

We thus arrive at the conclusion that the universal tradition of the Fathers is that Adam made his entrance into the world as a grown man; and also, though this is not quite so clear, that the body which, when united with the God-inspired soul, made up the man Adam, was instantaneously, or at least not by any usual process, evolved out of the elements of matter. We say this last is not so clear, because, though the Fathers everywhere undoubtedly imply it, they do not formally say it; because the question as between sudden production of the body and completely progressive evolution could not have occurred to them. It is remarkable that the one who speaks most clearly is S. Augustine himself in the passage just cited; and yet there is a certain amount of hesitation in his words;† and he might certainly be taken to be speaking of the question whether *Adam* was formed an infant, and not whether *Adam's body*, infantile or not, had grown by natural processes before the soul came into it; which latter is the question here at issue.

We can hardly help, therefore, taking it as "Catholic doctrine," that Adam first took his place in the world as an adult man, without having previously been either an embryo or an infant. But if this be so, it would have been less miraculous to fashion his body expressly for him and to unite soul and body together in the instant of fashioning, than to have taken a previously developed animal and, expelling or superseding the animal soul, breathed into it the soul of a man. This reason, together with the *superficies* of the literal sense of Genesis ii. 7, and the implied, if not express, consensus of the Fathers, and, we may add, the *sensus fidelium* also, which, though not well defined on the question, undoubtedly

* "In Genesim ad lit.," lib. vi. cap. 13, n. 23.

† An potius hoc non requirendum †

leans to the side of immediate formation,—all these reasons combined would make it—we are inclined to think—at least rash and dangerous to deny, that the body of Adam was formed immediately by God, and quasi-instantaneously, out of earth.*

And what we have here concluded about the body of Adam, may be said still more confidently about the body of Eve. No one can deny that the Fathers are unanimous in asserting that, just as Adam's body was formed of the earth, so the body of Eve was formed of a rib of Adam, in the literal sense. Suarez declares this to be "Catholic doctrine"; and the only eminent man that has maintained a metaphorical sense for Gen. ii. 21, is Card. Cajetan,† who has never had a disciple. Eugubinus (Jerome of Gubbio, a celebrated Italian physician of the sixteenth century) held that the first created human being was *androgynous*, and that the formation of Eve was the separation of the two sexes. But he is quite alone, and his assertion has only served to furnish a paragraph of refutation to orthodox writers.‡ The body of Eve, therefore, was formed after the creation of Adam, out of his rib, immediately by God, and instantaneously; the last condition implying not necessarily strict instantaneity, but at least the briefest and shortest stages; not, perhaps, one instant, but at all events, not many.

Men whose minds are much occupied with physical science at first hand, or even who read books and enter earnestly into scientific problems and victories, and who at the same time are weak in supernatural faith, cannot fail to be shocked and repelled by the miraculous. God, when He works by nature's laws, works in such

* *Propositio temeraria* apud censores Theologos ea est quæ in materiis theologicis sine sufficienti fundamento vel auctoritatis vel rationis asseritur; vel aliter ea est quæ communi SS. Patrum doctrinæ adversatur, aut quæ constanti theologorum sententiæ contradicit absque gravi rationis vel auctoritatis fundamento.—Montaigne, "De Censuris," n. 6 (apud Migne, *Curs. Theol.*, tom. i.)

† *Patres omnes et universa Ecclesia usque ad Cajetanum ita Scripturam intellexerunt, ut tanquam rem certam et catholicam crediderunt Evam ex costâ Adæ fuisse formatam.*—Suarez, "De Opere sex Dierum," lib. iii. cap. 2, n. 4.

‡ We have not quoted S. Thomas, nor even the later *schola*, such as Suarez and Berti, as authorities on the questions here discussed; because what they say, as distinguished from their arguments, is only a repetition of some statement of an earlier writer, and we are here inquiring for Patristic authority. Of course we have been guided throughout by their interpretation of the Fathers, and we could easily load our pages with voluminous citations. But they throw no light upon the precise question of *evolution*, because, of course, they had never heard of it. We think, however, that Suarez, for instance, will be found to go no further than we do, if it be borne in mind that the question is, what is right or safe *from the point of view of Catholic faith*.

silent ways, making every step hardly a step and every change so imperceptible, that the observer of nature finds his imagination beginning to make a sort of worship of the *gradual*. The miraculous becomes not merely a falsehood, but an impiety; it seems to contradict God's own acted word. But the eye that looks too exclusively on physical nature loses the habit of considering that nature is not the whole of God's plan. Nature was not made for nature's sake. The world is for man, and man means reason, free will and conscience. God's dealings with man are not confined to the mere conservation of nature. Every one who admits the Incarnation must admit the extraordinary—not to say the extra-natural. It would seem that, considering man's reason, and God's manifested care of him, we should even expect that the extraordinary will intervene at certain important points of his history. And it would seem, also, that his first appearance in the world was a fitting occasion for it. Taking for granted that man was to be a spiritual and immortal soul, and that his soul therefore was a special creation out of nothing, it does not seem incongruous that his body should have been "fashioned" after an extraordinary way.* The first beginning of an order of things should correspond to the whole course. Man's body was to be the instrument of a spiritual essence, and to be ruled and guided according to far other laws than those of chemistry, of locomotion, or of instinct. Therefore it is right that it should have been specially formed. It is even questionable whether any animal organization whatever, not surpassing the wants of an animal, could have been a fit instrument of a rational soul, without special, and therefore miraculous, adaptation. We know, for instance, that the weight of brain in proportion to bulk is at least four times as great in man as in any animal whatever. And considering the enormously complicated play of fantasy, of emotion, and of sensitive memory, which is introduced by reason, it seems at least a reasonable supposition, though it can never be verified, that no apparatus of nerves and nerve-matter which would suffice for an irrational creature, would be fine enough

* Mr. Wallace's admission that man was not altogether developed by natural selection, is an example of how "scientific" men dread the shadow of the extraordinary. "The inference," he says, "which I would draw from this class of phenomena is, that a superior intelligence has guided the development of man in a definite direction, and for a definite purpose. . . . At the same time I must confess that this theory has the disadvantage of requiring the intervention of some distinct individual intelligence, to aid in the production of what we can hardly avoid considering as the ultimate aim and outcome of all organized existence—intellectual, ever-advancing, spiritual man." (*Contributions, &c.*, p. 359.) The "ultimate aim and outcome" of the act of a man who presents me with a house and estate is, in a certain sense, myself; but what "disadvantage" is there in the theory that I myself am not grown on the estate?

or extensive enough to provide that sensitive accompaniment which ever goes together with the independent spiritual action of the soul. And is there not much violence and improbability in trying to imagine the conversion of an animal into a man? All things are possible to God; but it would surely require a clear revelation to make us dream of supposing that an adult animal, with all its organs adapted to the narrow circle of a rough and elementary sensitive experience and fixed in the instinctive pursuit of a few objects of appetite, should suddenly vibrate with consciousness, and feel itself master of its choice and knowing right and wrong. But all who do not admit that the spiritual soul can grow, would, on the hypothesis that an ape suddenly became a man, be obliged to hold this. It is quite true that Mr. Darwin would not be affected by the absurdity of such a view; for he admits no soul in man that is different in kind from that of the brutes. And so the debate seems to resolve itself into this; shall we maintain special creation and the spirituality of the soul, or continuous evolution, and confound intellect with sensation? The spirituality of the soul is really the point at issue. If it can be shown that man's soul is proved by facts to be of a widely different *kind* from any power we know of in the brutes, no amount of experiment and no analogical physiology will ever bridge over the chasm between the two, or show that the higher can issue out of the lower. If, on the other hand, reason be only an extension of instinct and the spiritual only the material in a refined state, evolution becomes at once so probable that in examining its proofs we should set out with a strong presumption in its favour.* We maintain, of course, that the spirit is one thing, the animal-soul quite another. And as we think that facts show this as convincingly as they can show anything, we will give here an outline of our case.

Powers, agents, or forces, can be known by their effects or phenomena. This is so true, in physics at least, that there are many who assert that all we can know of the constitution of a force or power is the synthesis or complex of its effects upon ourselves or upon other beings. But it is convenient to use the word "power," as expressing that nature or φύσις which, when in contact with other natures, is seen or known by certain resulting phenomena. Even if it be true—which of course we distinctly deny in the case of the human soul, at least—that there is nothing beyond

* No mention is here made of the argument from the revelation of the original justice in which man was constituted by his Maker; because it is defined, not that man was so *created*, but that he was so *constituted*; so that there might conceivably have been a time in which he had only natural gifts. But we need not say it is the more common and far the more probable opinion that our first parents at the moment of their creation received supernatural sanctity at the same time with the gifts of their human nature.

the group of phenomena, nevertheless the stability and unity of the group may fairly be represented by such a name as power. If, therefore, it be proved that two sets of effects or phenomena are different, it is evident that the powers or natures from which they proceed are different in the same proportion. But a difference may be of two kinds,—mere difference or disparateness, and proper difference or opposition. Opposites not only differ from, but exclude, each other. When two sets of phenomena differ so far that they exclude each other, there can be no doubt whatever that they proceed from powers or natures which exclude each other. Thus the analyst uses his test-papers and his tubes, and according to the phenomena which he obtains, he classifies the substance or nature under its proper name; or if the phenomena are altogether new, and exclusive of all others with which science is acquainted, he concludes that he has discovered a new substance, and gives it a new name. Exclusiveness of effects, then, is a test of difference of nature. But exclusiveness may be either relative or absolute. Properties or effects may exclude each other under certain circumstances, but not under others. A portion of gas may exhibit the phenomena of burning; another portion, under different circumstances, may refuse to burn; but it cannot be inferred that these two portions of gas are different substances; they are perhaps only relatively different. Now relativeness is of various degrees of transcendentalness. In plainer words, a fact that is absolutely true in one order may be only relatively true in another. Thus it is said that the very distinct sensations which we respectively call sight and hearing may be analysed, as to their exciting cause, into a repetition of one and the same primitive infinitesimal element. Thus, again, two highly complex and completely distinct organic substances may really consist of the same molecules, and these molecules, differing as they do in all their properties, may perhaps consist of homogeneous ultimate atoms. And we believe that philosophers make a further generalization, and think that the ultimate elements of all matter, ether, light, heat, or by whatever name force is called, may probably be found to be of one and the same substance. It may seem, therefore, that no two known natures absolutely exclude each other, except the last, unattainable elements of all natures. But we have now to notice the important fact that even these ultimate particles do not exclude each other absolutely. It may be said that a being gifted with an eye sufficiently penetrating could make sure that one of such atoms was not the same as another, from the very fact that it never could be another, or resolved into the other's elements (elements not being possible in the ultimate). The phenomena being always individual, the nature must be individual too, and thus they would be different individuals. It would be impossible to think of one atom as occu-

pying the same space, time, or place as another atom ; and thus it would seem, though this would not constitute a great difference, it would be an ultimate and absolute difference, impossible to transcend. But is it so ? Can we not conceive that neither space nor time nor locality exist ? Then, it will be replied, the atoms would not exist either. This we at once admit. But that is not the point. The question is whether there is a view of matter more ultimate and absolute than analysis into its own elements ; or rather, it is to show that if there exist such a transcendental analysis, it is absolute and ultimate in a true and proper sense. And it is evident that if an atom can be viewed independently of space and time, the atom so viewed will differ from the atom viewed under space and time in a way which is certainly well expressed by the word absolute, because it is an incomparably more fundamental difference than any other difference which our faculties know, or can know, in matter.

Two things follow from this last proposition. First, it will be evident that any independence of space and time which there is in the atoms (or, to leave the atoms, in material nature), will not be there by virtue of material nature itself—on the hypothesis, it is understood, that any such independence exists. Secondly, between the cognitive powers which apprehend the phenomena as under space and time and as not under space and time, respectively, there will be a great difference—a difference analogous to the difference in the phenomena ; that is, a difference as *absolute* as our faculties can conceive ; or at any rate, a difference so absolute that even if the word absolute be refused to it, man must invent some special word to express it, just as the difference between the phenomena under the two several aspects must be described at least by some word which transcends even the ultimate conceivable elements of matter.

For the sake of convenience, we may call a notion which pre-scinds from space and time the *abstract*, although the word has several other acceptations, and, indeed, is rather indefinite. But it will answer our purpose here. Now it certainly seems that few will deny that this “abstract” exists in our consciousness. But in order, not so much to prove that it exists, as to define more closely what it is, let us take one or two facts of consciousness, and try if we can discover it in them.

Let it be supposed that I am the spectator of a great battle. Posted upon the vantage-ground of a lofty tower, I see it begin, continue, and come to an end. Early in the morning, whilst the rays of the summer sun are yet slanting nearly level across the plain below, one host is coming into view and massing its battalions where the slight rise of the ground meets the sky. Opposite to it is the vast irregular semicircle of the enemy, half hidden in dips and hollows, one flank resting upon a wood, and a broad high-

road running through the centre of his position. The battle begins with the advance of a strong division on one side, and a heavy fire of shells from batteries of both the armies. The advancing forces are met by others; the sharp cracking and rattling of the rifles mingles with the roar of the cannon; more forces engage; the battle is general all along the line. The noise and the smoke confuses the spectator. There is retreat, advance, flight, first on one part of the field, then on another. Bodies of troops are broken, the dead begin to strew the field, and the bearers of the wounded pass swiftly between the battle and the rear. Brilliant masses of cavalry thunder down upon bright lines of bayonets that wither them with far-reaching death. Officers gallop hither and thither; the reserves come up; shouts as of victory are heard, and with a general advance of one army, the other is driven back, broken, put to flight, slain, or taken, until the wave of war seems to pass away over the sky-line from whence in the morning the attack had been made. The sun sets and the moon rises upon wreck, blood, dead and dying men, plunderers, slowly vanishing smoke, and what seems like silence.

All this scene I have taken in with my senses. Complicated as it has been, I have followed it with accuracy, estimated distances and velocities correctly, and formed a fair impression of what has actually been transacted. What is more than this, I have that scene with me still, although it is past never to return. I can recall it on the following day, a year after, now. And when I recall it, it seems to be the same in its details as when I saw it. The battle-field comes back to me with its apparent space and breadth, the horizon, the wood, the hollows, and the road. I realize the colour—the green of the grass and of the springing corn, with their different shades, the darker wood, the red and the blue of the massed troops, the glitter of helmet, bayonet, and scabbard, the flash of sabres, the lightning and black storm of the guns, great and small. I seem to hear the sounds. The din of roaring culverin and bursting missile, the noise of men and of horses, the far-off rushing, audible and desperate, though so far away—how clear they come back! And I distinguish in my fancy all the movements and manœuvres of that hard-fought day—the charges, the *mêlées*, the retreats, the pursuits. Many a slight and momentary scene or sound revives—the gallant rider throwing up his arms as the fatal bullet found him out, the plumed hat with which the field-officer on the white charger waved on his men, the mad riderless horse that galloped my way, the wild shriek that once and again had come up out of the uproar and appalled me. It all remains; not, perhaps, as fresh to-day as it was yesterday, but quite unmistakable; and it is probable that I shall carry it with me to my last moments. If I lose any of the details, I can often

recall them by first of all recalling what preceded or followed ; one fragment of the picture suggests another. And even if I meet with similar details in quite other scenes, my battle is brought back to my imagination. The harmless firing of volunteer artillery recalls the fearful volleys of that day. I cannot see the smoke of a weed-fire hanging in the air of a March afternoon, or watch the mists curling along the sides of a wooded hill after rain, without having the lurid canopy of that field in my thought again. When I mount a church-tower and look out over Yorkshire wold or Cornish moor, I range my armies as they once stood on another plain far away. The smell of the blue-bells never fails to make me think of that day, for there was a patch of blue-bells under the trees by my post of observation. Whenever I see again that peculiar arrangement of the clouds that marked one moment of the day, I recollect the tremendous rush of cavalry there was just then. Nay, if I had reason during the fight to fear for my own life or safety, there are moments when a tremor of my nerves, proceeding from fear or from ill-health, or from surprise, will carry me back from the midst of a crowd and from the engrossment of interesting conversation to the moment when I stood solitary and anxious so long before upon the tower.

Upon such undoubted facts as these, which of course no one denies, it is observed, first, that there is a certain internal process by which we reproduce in our consciousness what has once impressed our senses. Shall we call this process Thought? There is no doubt that nearly all modern English and French metaphysicians call it Thought. But it is not the custom of Catholic philosophy to use the word Thought in this sense. The reason of this is on the surface ; for it is evident, in the second place, that all the internal process that has been described above is a mere reproduction of the sensible. I have nothing more when I recall the battle than I had when the battle was going on ; indeed, not so much. If there was colour, locality, external shape, motion of body, and the passing of time, in the phenomena of the battle, all these reappear in my reconstruction of it. Take the point of time, which may seem the least likely to be reproduced. It is certain that if I recall the battle exactly as it happened, I shall be just as long over doing so as it really lasted when it was fought. An incident is made up of other incidents ; and the ultimate element of all sensible incidents is an infinitesimal "shock of the sense" ; the feeling or consciousness of time consists in the consciousness of "before and after" in sensible impressions. It is unavoidable, then, that if an incident or a succession of incidents be reproduced in the imaginative way just described, the time occupied in doing so must be the same as that which the incidents occupied when they really occurred. But incidents never are reproduced with

absolute exactness, or with anything like it. A continuous impression is made on the senses when such a scene as a battle is transacted in their presence; but of the enormous multitude of minute "shocks" only certain of the more vivid groups can be reproduced; just as the wind that moves the leafy branches of the trees leaves no record of its ceaseless activity except when it has risen to a gale and torn away trophies of its force. Thus time is always found in the pictures drawn by the imagination, as far as the imagination reproduces. And indeed that time and all the other sensible accompaniments should be there as they were when the impressions were first made is only what might have been predicted beforehand. For this image-producing or picture-painting is nothing but a continuation of the actual sensible impression. Whatever be the nature of the thrill or vibration or undulation that is the condition of sensation in brain and nerve, that condition has a tendency to continue, and will continue, until it meets with conditions powerful enough to expel it; just as a long chain suspended from a high vault swings for hours after it has been set in motion. And even if the nerve-condition—which, however, be it observed, is not the whole of the fact of sensation—even if this condition be thought to have ceased, it can be made to begin again without any such external impression. In either case the nerve-condition is precisely the same in reproduction as in actual experience. And this alone is sufficient to prove that whatever there was in the sensible experience, so much and no more is there in imaginative reproduction.

We all know that it is said of some people that they never reflect. Taken literally, of course, the case never happens. However habitually a human being may be taken up with what his senses tell him, he cannot help making some kind of rudimentary reflection on what passes before him. But let us suppose that we had actually found a man who never had had any ideas or consciousness except such as imply place, space, colour, and time. Let us suppose that the man who witnessed the battle already mentioned had lived for several years after it, and neither during its occurrence, nor since, had travelled out of the region of impressions and reproduction described above. And let it be supposed that, one day, under circumstances of peculiar quietness and solitude, there suddenly arose within his mind a reflection—the reflection, for instance, that the battle after all was utterly *useless*. Surely this is a step into a higher atmosphere. He did not see that in the battle itself. "Utility" did not come in through his eyes and ears. It certainly did not exist in the battle. For the same reason it could not have existed, and so been impressed on his sense, in any other battle or in any other incident whatever. Besides, even if it were possible that it had existed elsewhere, and been caught by the

sense, the difficulty would still remain of accounting for its connection with that particular battle—connected, be it observed, not as when one sight or sound suggests another without suggesting a relation, but by a definite process of affirming the battle to be what it did not at all declare itself to be. Can a relation, or an affirmation be given in sensible impression—in reiterated shocks of the sense? This is the deeper question which is forced upon us. We may leave out of consideration the abstract “utility” and the difficulties attending its origin and application. The question is, Can the sense say anything, make a judgment at all? Can it furnish the blank formula of judgment—the “is,” in “A is B”? The grass of the battle-field was green, and the sense gave both the grass and the greenness; but did it affirm that “the grass is green”? It may be answered that “grass” and “green” together form one complex sensible object, which is an object under space and time, and therefore of sense. But against this the rejoinder at once is, that the sense may indeed take in and report (so to speak) a complex object, but that in this case the question is, not about the complex object, but about the *complexity* of the object. It is one thing to see “green grass,” and evidently quite another to affirm the *greenness* of the grass. The difference is all the difference between seeing two things united and seeing them *as united*. It may be further contended that “grass” is an object of sense, and “greenness” also is an object of sense, being the remembrance or revival of a certain frequently-repeated sensation, which, in order to label it, has been denominated greenness; and since both the terms of the judgment are objects of sense, the juxtaposition or composition of the terms may also be effected by the sense. But the reply again is evident. “Green” in the sense of “greenness” cannot have come from the sense—that is from any faculty which is impressed only by a repetition of shocks in space and time; for, first, it is not the greenness of any particular object, but greenness in general; secondly, it is not the greenness of all the green objects experienced in the past, but, as is admitted, a general idea acquired from these, and labelled or named; and, thirdly, even if it were the greenness of a particular sensible object, the sense, as we have already contended, could not have given it, because the sense only gives “green.” A further important consequence follows. If in the judgment “the grass is green,” “green” cannot have come altogether from sense; then neither can “grass” have come altogether from sense. In other words, “grass” seen or known by sense is a different mental object to “grass” as the term of an affirmation or judgment. For, in this particular judgment, of what is “green” affirmed? Of this plant called “grass.” But “green” is a part of the object “grass,” as it comes to the sense. The sense knows no such thing as green and no such thing as grass as existing

separately, over against each other, comparably ; it only knows a particular plant which would not (by hypothesis) be this particular plant at all unless it were green. And therefore, just as the term "green" in the affirmation contains in it an element not furnished by sense, so does the other term "grass." It is evident then, that not only must we say of a judgment that the relation it expresses by the word "is" cannot have been furnished by sense-impressions, but we must also say that the very *terms* of that relation or judgment must also have been derived from another source.

It need hardly be insisted that the terms of this judgment, let alone the "is" of the judgment, are independent of space and time. Not only so, but they so absolutely exclude and transcend space and time that to think them under space and time would be to destroy them. "Green," as we have so often said, is not this greenness, but greenness in general ; but no such thing as greenness in general exists *in rerum naturā*, or can be conceived to exist. But if greenness be thought under space (so much) and time (so long) then it is no longer greenness, but some green thing. And "grass," also, in the judgment, is independent of space and time. For to judge that grass is green implies, as we have said, a mental separation of this grass from its greenness ; for you cannot compare two things between which no separation exists. But this grass does not exist in space or time separated from its greenness ; and so far as it is thought under space and time, it actually is (the same as) green. Therefore as it occurs in the given judgment, it excludes space and time. And the same reasoning might be made as strongly in regard to the copula, "is." If a brute could think "is," brutes and man would be brothers. "Is," as the copula of a judgment, implies the mental separation and recombination of two terms that only exist united in nature, and can therefore never have impressed the *sensu* except as one thing. And "is," considered as the substantive verb, as in the example "This man is," contains in itself the application of the copula of judgment to the most elementary of all abstractions—"thing," or "something." Yet if a being has the power of thinking "thing," it has the power of transcending space and time by dividing or decomposing the phenomenally one. Here is the point where Instinct ends and Reason begins.

If it were not a fact that such books as Mr. Herbert Spencer's "Principles of Psychology" are written and read by intellectual men at the present day, it would seem superfluous to go on to say that the faculty which elaborates what we have called "the abstract" cannot be the same faculty as that which receives and conserves the sensible. The simple reason is, that they necessarily exclude each other. The faculty which is affected by the shock or impact of the external object, must convey the object under space-

conditions and time-conditions, and, if so, must revive it and reproduce it under the same conditions. But the mind, as we have shown, has notions or ideas which, as a condition of their thinkableness, exclude space-conditions and time-conditions. Therefore it is impossible that the latter class of notions can reside in or be elaborated by, the faculty which takes note of the former.

In making the foregoing observations the simplest example has been taken, an example hardly one degree removed from the blank formula of judgment. But it is evident that the spectator of our battle, if he were a reflecting man, and much more if he were an educated thinker, would have thought much and made innumerable reflections on that battle—reflections which, if set down, would make the evidence for the existence of a higher order of thought (or as Catholic philosophers prefer to call it, thought proper) not perhaps more evident, but much more vivid and impressive. He might have written a description of the battle, and in the course of it he would no doubt have speculated and reasoned about it from various points of view. He would have examined the End or purpose with which it was fought by both sides respectively, and how far each had succeeded or failed. In the course of this examination he would have spoken of such highly abstract ideas as the State, the Family, the Individual; he would have generalized on Religion, on Politics, on Finance; he would have touched, perhaps, on difficult questions of morality and looked into the obscure depths of Free Will. Amid the smoke and the noise of the field he would have seen the Hand of God and read the lessons of Providence. The massed squadrons would have been in his eyes Christian men and immortal souls; the idea of Judgment would have made him shudder as death was busy, and the terrors of a Future State would have made that scene of carnage indefinitely more serious and terrific. Or if he confined himself to mundane reflections, he might have entered into a wilderness of hypothetical calculations and possibilities, tending to prove the tactics a mistake and the commanders foolish blunderers; and he might have filled page after page with chains of consequences and serried demonstrations. All this complex reasoning would rest, so to speak, on that scene which he bore away in his imagination when he descended from his tower of observation; but it would be a new world—a world colourless, bodiless, out of space, out of time; a world that his eye had not discovered on the earth or in the clouds, but which a higher vision than that of the body—a power so high that it is an image of the Highest—had furnished forth to his intelligence and made quite as real as the world that struck upon his sense. A broad comparison between the world of sense and the world of reason, we say, tends to impress the observer with the truth of the assertion, that sense and reason themselves are two absolutely different things. On the

one hand there is the concrete singular, alone or grouped and combined, capable of affecting the sensory nerves of the human body with repeated shocks, from whose quicker, slower, and variously combined impressions, there arise all those differences of consciousness that are called colour, hardness, distance, locality, space, time, and the rest. On the other hand, there is the equally varied realm of reason and reflection, of antecedent and consequent, of doubt, opinion, certainty, of analysis and classification, of daring views and profound speculation, of infinitely progressive syllogizing and never-ending intellectual advance, of grand thoughts and worshipful ideas; all of which phenomena of our inner world are the evolution and the synthesis of the primitive "abstract"; of that primary operation whereby the mind views the quality or thing as separable from its conditions of existence, and as comparable with, or standing over against, something which is actually part of it as far as it is presented by the sense. For obvious reasons, especially in these days of analysis and evolution, we have compared together the primary elements of these two realms of consciousness—the primordial shocks of sensibility with the primitive constituent of thought. Their difference seems to be completely evident. And their centres of elaboration must be different also—as different as any two things can be conceived different within the circle of the created. The one power, sense and imagination (which for the purposes of the present discussion need not be distinguished) man has in common with the brutes; and the power of action which is its correlative, a power acting, necessarily, without knowledge of means and end as such, and automatically, is called Instinct. The other power, reason, is solely human; and its activity is free, spontaneous, and completely reflex, and is called Intelligence. Intimately as the two are connected in man, yet there are phenomena in which their distinction seems almost discernible to the eye. One of these is the remarkable effect produced on each respectively by the excessive activity of their respective objects. Any excess of a primary object of sensibility, such as colour, is first painful and ultimately destructive to the sense. The reason is easy to see; excessive rapidity of impact in the primitive elements of sensible excitement acts upon the organ in such a way as to disintegrate its tissues. But with regard to the "abstract" or anything compounded of "abstracts," no amount of clearness, luminousness, definiteness or intensity produces any effect of pain. The sensible eye may be blinded by light, but the eye of the mind was never blinded by Truth. The idea is absurd. And there is another fact closely allied to this. It is the suggestive fact of the co-existence of contradictory states of activity in the mind. Allusion is here intended, not so much to the way in which the seeing-power of reason gradually calms the blind outbreak of the sensibilities;

but to the fact that a man sometimes has what seem to be two contradictory sets of activities going on at once within him. Take, for instance, the case of hunger. On the one hand, the hungry man experiences a feeling of discomfort and pain owing to a physical condition—the inaction of the alimentary canal; and this is accompanied by a desire for food, and, if food be present, or only imagined to be present, by the nascent activity of all the muscles and organs that are used for seizing and taking food. Here we have hunger as a pain, food as a desire, and activity actually commenced. On the other had, let us suppose the hungry man to have resolved, for some reason or other, not to eat just then. In this case we have, at the same time, hunger as a pleasure, food rejected and activity controlled. Surely it is impossible that these *contradictory* states and activities—pleasure and pain in the same thing—desire and rejection of the same—activity striving and controlled about the same—it is impossible that these contradictions should exist in one and the same immediate subject. As soon could a man sit and run, be asleep and awake, be in a fever and be quite well, at one and the same moment.

It seems to us, then, that the absolute difference between Imagination and Reason, Instinct and Intelligence, rests upon the ground of incontrovertible fact. But in order to meet the many specious objections which we admit may be raised, we must dedicate the remainder of our space to a consideration of Instinct and its phenomena.

There is no doubt that the apparent knowledge of end and means possessed and acted upon by some of the brutes is among the most difficult facts to be accounted for without allowing them the possession of reason. Mr. Darwin quotes the following two anecdotes in his recent work; they are perhaps the strongest facts he has adduced, though, of course, there are plenty of such stories to be met with both in books and out of them.

Mr. Colquhoun winged two wild ducks, which fell on the opposite side of a stream; his retriever tried to bring both over at once, but could not succeed; she then, though never before known to ruffle a feather, deliberately killed one, brought over the other, and returned for the dead bird. Colonel Hutchinson relates that two partridges were shot at once, one being killed, the other wounded; the latter ran away, and was caught by the retriever, who on her return came across the dead bird; she stopped, evidently greatly puzzled, and after one or two trials, finding she could not take it up without permitting the escape of the winged bird, she considered a moment, then deliberately murdered it by giving it a severe crunch, and afterwards brought away both together. This was the only known instance of her ever having wilfully injured any game. Here we have reason, though not quite perfect, for the retriever might have brought the wounded bird first, and then

returned for the dead one, as in the case of the two wild ducks.—“Descent of Man,” vol. i. p. 48.

This is a fair example of what induces Mr. Darwin and others to assign reason and intelligence to the brutes, and to assert that they differ from man on this head only in degree. But what is it that is implied in such actions as these just described? * Animals, as all admit, have the capability of feeling internal states or conditions of their organism, as for example, hunger, thirst, and other kinds of pain. Moreover, they have external sensations; the circumstances round about not only move them, but make them feel. Now, the analogy of our own experience proves that this combination of internal and external feeling gives rise to a tendency; the animal that feels hungry and sees food, feels an attraction or longing for it. This tendency, which is physiologically a nascent excitation of the organs by which the pain or inconvenience is overcome, at once, therefore, puts in play any apparatus that may exist in the animal which may be suitable for the attainment of its want. That is to say, the animal feels its own organization and is borne forward, by the fact of its being alive, to certain ways of acting; sensibility conveys to it the presence of those external objects which are suitable to it; the twofold consciousness, causing excitement of the nerve-fibres, causes also contraction of those muscles which are intimately united with them, and external action is the result. All this is implied in instinct. And yet all this does not imply the “abstract,” even in its most primitive element. Doubtless instinct has an infinite number of gradations. Between the hydra that has no nervous system at all, and holds its food fast by the mechanical squeezing of the simple *sac* that constitutes nearly all its organism, and the hunting cat, that calculates its distance to a hair's breadth when it leaps upon the bird in the hedge, the degrees of complexity of nerve-centres and muscular centres are innumerable. But they are only degrees—degrees of greater or less complexity in the reflex action that is the result of nervous excitation.

But two important observations must here be made. The first is, that animals, since they have sensation, have also imagination. That is to say, their nervous system has the faculty not only of receiving, but of retaining impressions; and not only of retaining, but of reproducing them. The nerves which constitute the sensorial organs are grouped in distinct centres. In proportion as these centres satisfy certain conditions, so are sensations retained in them

* We here acknowledge some obligation to M. Joly's book upon Instinct, named at the head of this article. It is a work in which the difference between instinct and intelligence is explained and proved at length in the most solid and satisfactory manner.

more vividly; and, being retained, they of course influence other connected centres, and produce various motions in the locomotive organs. If, therefore, it be granted that locomotion is a consequence of sensation, it must also be granted that locomotion may result from revived sensation, that is, from the operation of the imagination. And when several sensations are revived (just as when several sensations are present) the action of the animal will correspond to that sensation, or group of sensations, which, for whatever reason, is most strong and lively.

The second observation is, that not only the sense, but the muscular system is liable to the influence of what is called Habit. The organs may become *habituated* to certain determinate motions. In proportion as these motions are repeated, they grow more and more easy; intermediate sensations, by which, in the first instance, the motions had been brought about, disappear, and the connection between a want or a sensation and a movement becomes so constant and necessary, that the one follows the other, so to speak, unconsciously. A canary, for instance, that at first draws his water with difficulty, soon draws it easily and quickly. Thus, habits modify instincts; or, rather, they are additional instincts. An instinct is a congenital habit; a habit is an acquired instinct.

If we bear these facts in mind, it is not difficult to explain what is meant by the "education" of animals. To educate an animal is to excite certain artificial relations between its sensations, and so to superinduce a habit or habits of movement which are not natural to such animal. Here is Brehm's description of the education of a personage who has been rather prominently before the public lately. The learned naturalist is speaking of the ape: "It is easy," he says, "to teach an ape to do a thousand feats. You show him clearly what you want him to do, and then you thrash him until he does it as you want. This is the whole art of educating an ape! As a general rule, an ape will learn any feat you please in the course of a couple of hours; and then you have only to make him repeat it from time to time, for he soon forgets what he has learnt."* And it is well known that bears are taught to act by putting them on hot tiles, and playing a drum and fife. Here an artificial relation is produced between the sound of the fife and pains alleviated by motion; and the corresponding motion follows and becomes a habit. So with the ape. A connection is established in the sensitive system of the animal between a gesture, a beating, and the performance of a certain trick; and this relation reproduces itself in the nerves whenever the gesture is repeated.

The explanation, therefore, of the actions of the two retrievers in Mr. Darwin's example does not seem far to seek. Let us take

* Brehm, *Les Mammifères*, p. 12.

the first. The animal had been educated to carry and not to kill; that is, its natural instinct, which would have urged it to destroy and tear what it found, had been modified by means resembling those used in the case of the ape and the bear, so that it carried game to its master's feet. It had been well educated, and the habit was very strong. Under these circumstances the animal has two wounded wild ducks before it. A great complication of instincts and habits at once besets it. First, the instinct to kill and tear; secondly, the instinct to hold fast; thirdly, the habit of carrying without killing; fourthly, a desire or emotion to be at its master's feet with something or other, dead or alive (for it had often carried dead birds). We may take for granted that it would act in accordance with the most vivid of these habits or instincts. Taking the actual results, therefore, a fair hypothesis would be that the instinct of holding, or not allowing to escape, was the strongest feeling, and therefore the dog killed one of the birds. The act would be a not very complicated case of instinct, such as one sees in every hunting animal; the wounded and fluttering bird irresistibly suggesting the sensation of escape. But as soon as one bird was dead, the same phenomena were not suggested by the other, because the dog had it fast; and, therefore, the "taught" habit of carrying without hurting was not interfered with. Exactly the same kind of answer may be given in the second case. The instinct of holding or keeping (not allowing to escape) was decidedly the predominant feeling, and the dog acted in accordance with it. It looked "puzzled," no doubt; any animal with conflicting desires would look puzzled, like the traditional ass between the two bundles of hay. The reason is, that the mechanism of sensation, and corresponding muscular action, is not adjusted *in instanti*, but requires a lapse of time, greater or less, according to the complexity of the circumstances.

Every single case that has ever been brought forward, or that can be brought, of the "intelligence" of animals—and no one admits more readily than ourselves the marvels to be met with in animated nature—may be explained on such principles as we have stated. It must be remembered that we establish the spirituality of the human soul—that is, the absolute difference of reason from sensation—on grounds taken from internal human consciousness. What we have to do, then, when answering difficulties such as those here noticed, is not to prove that certain visible results produced by the movements of animals might not conceivably under other circumstances be the result of reason like that of man, but that they can be explained fully and adequately, in the given case, without assimilating their motive principle to human reason. Animals may have many of the external attributes and gestures of man; they may seem to adapt means to end, to be conscious of

right and wrong, to speak and understand language ; but all these phenomena are sensible, not properly conscious, without reasoning, without judgment such as man has, in a word without the "abstract."* It would, of course, take a volume to draw out all the differences of detail between man and brute corroborative of this fundamental distinction. But perhaps enough has been said to show some *à priori* grounds for expecting that the human soul should have been specially created, and why no consistently reasoning thinker can ever hold that a monkey can develop into a man, understanding man as soul and body together.

We are so convinced that the question of the difference between matter and spirit is at the bottom of both Mr. Darwin's theories and of his blunders, that we have been led to dwell upon the subject, rather to the exclusion of any direct criticism of his book. The truth is that if we criticised in detail those chapters which speak of the intellectual and moral evolution of man, we should have to repeat the same complaint at every paragraph ; the complaint that he makes no difference of kind between the highest operations of man and the lowest ; between the operations of the animal and those of the man. It is this fundamental obtuseness that makes nearly everything in the "Descent of Man," except the stark facts, so unsatisfactory and even so contemptible. How can you reason with a man that can see no difference, except in degree, between the purely sensitive "talk" of a parrot, and the "universal" that is contained in the sentence of a man ? Between the animal affection of a dog for his master, and the abstract judgment implied in man's worship of God ? Between the act of a dog licking a friendly cat in its basket, and a man judging of right and wrong ? How, at least, can you argue with him except by showing, once for all, in some such way as we have endeavoured to do, that there are two absolutely distinct orders of internal phenomena in the human mind ? The position of Faith, then, with regard to theories of evolution appears to be this. It is not contrary to Faith to suppose that all living things, up to man exclusively, were evolved by natural law out of minute life-germs primarily created, or even out of inorganic matter. On the other hand, it is heretical to deny the separate and special creation of the human soul ; and to question the immediate and instantaneous (or quasi-instantaneous) formation by God of the bodies of Adam and Eve—the former out of inorganic matter, the latter out of the rib of Adam—is, at least, rash, and, perhaps, proximate to heresy.

It is to be expected that scientific men will answer Mr. Darwin's

* "All these (apparently human) tendencies in the lower animals are stopped dead, as it were, by the want of the faculty for apprehending universals."—Sir A. Grant, "Contemporary Review," May, 1871, p. 277.

"Descent of Man" on his own ground. Mr. St. George Mivart has already put the difficulties against natural selection in general in a light which must strongly influence the thought of the day, as his book becomes more widely known; and we expressed in our last number how very highly we estimate his labours. If he undertakes to criticise Mr. Darwin's latest effort, he will find his task the more easy in proportion as that work is weaker in argument and more fanciful in that propensity for extracting universals out of singulars which is a besetting sin with theorizing men of science. But while we most fully admit the value and the necessity of scientific answers to Darwinism, it must be remembered that a merely scientific answer cannot possibly refute such errors as we have been noticing. If the evolutionists were merely scientific, our answer could afford to be merely scientific. But the thorough-going evolutionist is one who appends a metaphysical, or, we might say, a mythological, conclusion to an induction of facts that can never be complete.* To argue from the fact that men once dead do not come to life again, to the conclusion that Lazarus did not come to life again, is illegitimate; because there is another set of facts, viz., a God, a moral order, and a revelation, which are quite as real as the facts of death and non-resurrection. Hence to conclude peremptorily that Lazarus did not rise again, would be a mythological guess, not a scientific deduction; not to say that it would be a mythological blunder. It is the same with the beginnings of life and of existence. The limited number of facts which the observation of all possible observers can take note of has only as much value for purposes of deduction as natural uniformity has in the question of miracles. That is to say, uniformity in natural law, just as it is not absolute in the future, so it has not been absolute and indefeasible in the past. Therefore the certainty which it affords as to the nature of the beginning is only certainty in the absence of *à priori* probability to the contrary. But the evolutionists do not admit the possibility of *à priori* probability to the contrary. They set aside and deny such probability. Therefore their conclusions are not scientific, in any true and proper sense, but mythological; as mythological and as baseless as the speculations of the Antiquary in the romance, who thought he had discovered the site of Agricola's camp in the remains of a moorland hovel. And as they go beyond the lawful bounds of science, so those who answer them are obliged to insist upon much that is antecedent to science. This is, and must be, the position of all who hold a revelation and a moral

* An able article in the "Rambler," New Series, vol. ii. p. 361, uses the word "mythological" with regard to Mr. Darwin's first great work, "The Origin of Species," and argues somewhat as we do in this paragraph. The article is well worth reading.

order ; and whatever it may be good and useful to attempt afterwards, it must first be clearly laid down that the pretensions of our adversaries are unwarrantable, that their method is illogical, and that nothing can be more truly unscientific than to make science responsible for conclusions, which the mere observation of facts cannot by any possibility prove.
