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SIN AS A PROBLEM OF TO-DAY.

V. SIN AND EVOLUTIONARY THEORY—THE ISSUES.

ENOUGH has been said to indicate how seriously the Christian doctrine of sin is imperilled by the forms assumed by modern philosophical speculation. It is now necessary to consider the bearings on this doctrine of the still more formidable influence—more formidable because more widely extended and more penetrative of modern thought—of current theories of organic evolution.

No one who studies the evolutionary theory of man's origin, enormous antiquity, and primitive brutishness can doubt that there is call for such inquiry.¹ The force of the theory goes even deeper than in its effect on the doctrine of sin. In the forms of it that seem to find most favour with its accredited representatives—e.g., in the volume, *Darwin and Modern Science*, recently issued at Cambridge in connexion with the Darwin commemoration—it profoundly touches theism itself. There is no need for apology for any Christian thinker, though neither a biologist nor a naturalist, giving earnest attention to this subject. It is not a matter of choice: it is forced upon him by the necessity of the case. The theologian may be to blame when he rashly or dogmatically intrudes into the domain of science; on the other hand, it is not his place to be silent when the scientist makes bold inroads into *his* domain, and, in the name of science, would sweep away spiritual facts which stand on their own grounds of evidence as securely as any facts of external nature. Truths in nature

¹ In a note on "Adam, the Fall, the Origin of Evil," in his *Thoughts on Religion*, G. G. Romanes says: These, "all taken together as Christian dogmas, are undoubtedly hard hit by the scientific proof of evolution . . . and, as constituting the logical basis of the whole plan, they certainly do appear at first sight necessarily to involve in their destruction the entire superstructure."

and truths in the spiritual world cannot, of course, be in real collision. But this requires to be made clear against unwarrantable assertion on either side.

The present writer has no desire or intention of intruding into the sphere of science proper. He claims no more than the right of every intelligent mind to consider theories of science as expounded by their best representatives in the light of their own evidence, and to judge of them from the point of view of a sound connexion between premises and conclusions. He has no concern to dispute evolution within the limits in which science has established it, or rendered it probable. He would only plead for its being kept carefully within these limits in its bearings on religion. It will be seen in the sequel how far "evolution," in current use, is from being a term of single or simple meaning; how little it stands for one definite, harmonious view of the origin of organic beings; how many ambiguities, confusions, fallacies, conceal themselves under its high-sounding name. Only admiration, mingled with astonishment, can be felt at the ceaseless patience and marvellous skill with which a host of investigators are engaged in unravelling the intricacies of Nature's mystic web; but it may be claimed that the result is to show how little that is really scientifically proved conflicts with those beliefs on man's nature, origin, and sin, which lie at the roots of our most cherished Christian convictions.

1. Evolution is to be considered in its special bearings on the doctrine of sin; but this involves, to start with, a brief estimate of *the general trend of evolutionary theory* as a phase of the thought of the age.¹ Older controversies may, for the most part, be put aside: as authoritative guides for modern opinions one cannot do better than

¹ A more general review of evolutionary theories may be seen in the writer's book, *God's Image in Man and the Defacement*, and in his earlier work, *The Christian View of God and the World*.

take the volume already named, *Darwin and Modern Science*, with its twenty-nine essays by writers of distinction, supplemented by the able works on Darwinism and Heredity by Professor J. A. Thomson,¹ and the acute and valuable book by Rudolf Otto, of Göttingen, translated under the title of *Naturalism and Religion*.² Darwin's own works, naturally, must always be kept in view, though it will become apparent—Otto specially works out this thesis—how broad a distinction needs to be drawn between “Evolution,” and “Darwinism” as a special theory of the process.

Evolution, in some form, has *long been in the air*. Hegel was an evolutionist as truly as Darwin, but there is a wide difference between the philosophical and the scientific conceptions. Hegel beheld in the evolutionary process the movement of “idea.” Darwin built his theory on observation and interpretation of the facts of nature, eschewing any but natural factors in his explanations. His supreme service was that, in Professor J. A. Thomson's words, he made the thought of evolution “current intellectual coin.”³ He gave it scientific precision and enlarged basis, and connected it with a theory of the “how” in “Natural Selection.”⁴ The *fact* of evolution is now generally accepted: the *how*, it will be found, is still much in debate. It is here, in truth, the crux lies. Is “natural selection,” or any purely “causal-mechanical”⁵ theory, an adequate account of evolution?

¹ Chiefly his recent (closely related) works, the *Bible of Nature* and *Darwinism and Human Life*.

² The German title of Otto's book is *Naturalistische und Religiöse Weltansicht*. The translation is published in the “Crown Theological Library.”

³ *Darwinism and Human Life*, pp. 17, 19.

⁴ Darwin laid chief stress in his own claim on the discovery of the “How” (cf. *Origin of Species*, Introduction). Yet it is the “How” which is now a question. See further below.

⁵ *Dar. and Mod. Science*, p. 242.

A first impression produced by a study of Darwinism, as set forth by its advocates in the Cambridge volume, is its undisguised *naturalism*. Darwin, it is well known, seeks to give an entirely natural account of how species have originated, of how the rise has been effected from lower to higher orders of organic existence, finally, of how man has been developed, in both body and mind, from the animal forms nearest to him. The agency chiefly relied on to produce these changes is "natural selection,"¹ which, acting on unguided variations,² under the conditions of the struggle for existence, brings about the adaptation hitherto supposed to imply the presence of mind. Theologians, therefore, did not misrepresent Darwin in speaking of his theory as, in its essential character, inimical to theism. Of course multitudes of evolutionists qualify this naturalism in various directions—therein deserting Darwin. So far, however, as the volume, *Darwin and Modern Science*, is a true index to the prevailing trend of evolutionary thought, it cannot be described as other than unfavourable to a religious interpretation of nature.³ In the majority of the papers nature is regarded as capable

¹ While not upholding selection as the "exclusive" means of modification, it was that on which, at the beginning, Darwin laid practically all the stress. His book was entitled *The Origin of Species by Means of Natural Selection*. In the third edition he wrote (p. 208) that if it could be demonstrated that any complex organ could not be formed by this means, his theory "would absolutely break down." This opinion he lived to modify (*Descent of Man*, i. p. 152).

² Variations are not indeed without causes, but are held to be without design (in this sense "fortuitous"): are, as Darwin repeatedly calls them, "chance" variations. In *Life and Letters*, ii. p. 369, he speaks of "the action of selection on mere accidental variability." There is more here than the ignorance of conditions with which Prof. Thomson would ward off the objection of "fortuitousness" (*Bible of Nature*, p. 170). Prof. Ward, in *Naturalism and Agnosticism*, dwells on the difference between "evolution without guidance and evolution with guidance" (i. p. 205).

³ In certain of the essays this is made a boast of. Darwin is praised for his agnosticism and rejection of Christianity (pp. 114-15, 496); Christianity itself is satirized (p. 495).

of working out all her results in the order, beauty, harmony, adaptation of the world without the aid of intelligence or purpose.¹ Teleology—and this not simply the old teleology of Paley, but the immanent teleology which, in all secondary causes, sees the internal direction of means to ends, and general advance of creation to a predetermined goal—is eliminated. To the consistent Darwinian God becomes, as to Laplace, a superfluous “hypothesis.” It is a barren concession of Huxley and others that there *may* be teleology in the total system, though we cannot possibly prove it. If the universe can be explained without intelligence, why postulate it? The contention of pure Darwinism is that it can be so explained.²

It is a point of importance that Darwin will allow selection-value only to excessively *small and rare* variations, and that, of consequence, the process of evolution is assumed to be slow and insensible.³ It will be seen afterwards that this is a point in which the newer evolution tends to break with Darwin; but Weismann strenuously supports Darwin in it.⁴ In its bearings on man's origin, it leads to the

¹ Cf. e.g., pp. 61, 99, 100, 139, 141, 225, etc. “Assuming,” says Prof. Bateson, “that the variations are not guided into paths of adaptation—and both to the Darwinian and to the modern school this hypothesis appears to be sound if improved” (p. 99).

² Weismann, in his work *The Evolution Theory*, i. pp. 55–6, remarks: “The philosophical significance of natural selection lies in the fact that it shows us how to explain the origin of useful, well-adapted structures purely by mechanical forces, and without having to fall back on a *directive force*.” R. Otto, in *Naturalism and Religion*, emphasises this as the characteristic mark of Darwinism—the reason for which Darwin is called the Newton of biology—“its radical opposition to teleology” (p. 89, cf. p. 140).

³ He gives as an illustration a bird [being born with a beak $\frac{1}{100}$ of an inch longer than usual (*Life and Letters*, iii. p. 33). He does not doubt “that during millions of generations individuals of a species will be born with some slight variation profitable to some part of its economy” (*Ibid.* ii. p. 124).

⁴ *Dar. and Mod. Science*, pp. 22–3. Cf. *Evolution Theory*, i. p. 55: “Natural selection depends essentially on the cumulative augmentation of the most minute useful variations in the direction of their utility.”

conclusion that man has only very slowly and gradually risen from the ape (or cognate) condition, acquiring his higher powers through favourable variations of mind and body, preserved by natural selection and accumulated during long ages of semi-brutishness and savagery, till by degrees he attains to speech, arts, and civilisation.¹ 150,000, 300,000 or 500,000 years are not thought too long to allow for this development.²

2. It must be seen, without need of detailed argument, that the Darwinian evolutionary theory, thus sketched in very general terms, strikes deeply into the heart of the *Christian doctrine of sin* as that has been commonly understood. It does so both on the theistic and on the anthropological sides; but attention may be confined at present to the side of man. The older conception of an historical "Fall" of man of course goes. Instead of a fallen son, man becomes a rising creature. His origin is pushed back so far, his primitive condition is pictured as so brutish, such countless generations of animalism and savagery intervene before he gets his foot on even the lowest round of the ladder of civilisation, that the idea of a "Fall" from an original state of integrity (*status integritatis*) is out of the question. The doctrine of a "Fall," therefore, as taught in Genesis and by the Apostle Paul,³ is ruled out by evolutionary science and by the New Theology⁴—as by the older philosophy—as inherently absurd.

¹ The arguments in Darwin's *Descent of Man* are conveniently summarised in several papers in *Dar. and Mod. Science* (specially those of Prof. Schwalbe on "The Descent of Man," and of Hæckel on "Darwin as an Anthropologist") and in Prof. Thomson's works as cited. Darwin himself has a convenient summary in his closing chapter.

² Cf. e.g., Thomson, *Bible of Nature*, pp. 191-2; A. R. Wallace, *Darwinism*, p. 456; *Dar. and Mod. Science*, p. 130.

³ Gen. iii.; Rom. v. 12 ff.; 1 Cor. xv. 21; 1 Tim. ii. 13, 14; cf. John viii. 44; 1 John iii. 8; Rev. xii. 9.

⁴ Mr. R. J. Campbell thinks the doctrine of the Fall is largely responsible for "the theological muddle." "This doctrine has played a mis-

It is not only, however, a particular theory of the origin of sin that is put in question by the evolutionary conception: *the very idea of sin*, in the Christian sense, is essentially altered. Sin is no longer the voluntary defection of a creature who had the power to remain sinless. The very possibility of sinless development is excluded. Sin becomes a natural necessity of man's ascent: a something unavoidable in his history. It is, therefore, at least in its earlier manifestations, a thing exceedingly venial—hardly, indeed, imputable at all. The idea of a "guilt" in sin is weakened till it almost vanishes. With this must naturally be given up the idea of a world lost and perishing through sin, under condemnation, needing redemption and renewal. What has been called hereditary sin becomes the yet uneliminated brute inheritance.¹ The basis of the Christian Gospel seems removed.

In support of the contention that *the Fall* is no proper part of Christian doctrine, it is frequently urged that, after the "mythical" account of Genesis iii. (if even there²) no further trace of the doctrine is found in the Old Testament. The prophets knew nothing of it. This statement, however, goes much too far,³ and hardly looks below the surface. It would be truer to say that the fact of the

chievous part in Christian thought, more especially, perhaps, since the Reformation. . . . What I now wish to insist upon is that it is absolutely impossible for any intelligent man to continue to believe in the Fall as it is literally understood and taught" (*New Theology*, pp. 53, 55). He does not seem to believe in it in any sense.

¹ Cf. in the above *Christian View of God*, pp. 117 ff.; *God's Image in Man*, pp. 201 ff.

² Mr. Tennant, in his book *The Fall and Original Sin*, will hardly allow that the doctrine of a moral Fall is taught even in Genesis; cf. Campbell, *Op. cit.*, pp. 55, 56.

³ The J narrative, which records the Fall, is older than written prophecy. Wellhausen, also, in his *History of Israel*, assumes that the P writer was acquainted with JE on this subject (p. 310). On the historical kernel in Genesis iii. cf. Westphal, *Law and Prophets* (E.T. of his *Jéhovah*), pp. 33 ff.

Fall is presupposed in the whole picture which the Bible—Old and New Testament alike—gives of the world as turned aside from God, and in rebellion against Him.¹ Put the third chapter of Genesis out of view, the facts of the sin and disorder of the world have to be dealt with, and accounted for all the same. The question is—Can they be accounted for, in harmony with a true idea of sin, on the ground of such a picture of man's origin as Darwinian evolution offers?

Many Christian theologians, whose views are entitled to the highest respect, even if one feels it impossible to agree with them, think *an affirmative answer* can be given to this question.² These thinkers are impressed with the facts of evolution, with the consensus of opinion for the animal origin, slow development, and immense antiquity of man, and do their best to show that the Christian doctrines of man's moral nature and sinful condition are not affected by them. The argument may be set aside that man's nature being what it is, sin also being a fact of universal experience, it matters little what theory is held as to how they came to be. Beginnings and ends, causes and effects, must be brought into harmony, else, if the theory is wrong, the attitude to duty and to sin will soon change. The ground, therefore, usually taken in these irenic attempts is that there is room for the facts of man's moral life even

¹ Cf. Gen. vi. 5-12; viii. 21; Ps. xiv.; Rom. i. 18 ff.; iii. 9 ff., etc. Dillmann, in his *Alttest. Theol.*, holds that the Old Testament everywhere presupposes the rule of sin and death in contradiction to its original destiny, and the presence of an inborn evil tendency (pp. 369, 376 ff.). "So," he writes, "we are brought back to the doctrine of the prophetic narrator, of an original state and fall of the first man, who, from an uncorrupted nature, giving entrance to sin, did that which had fatal consequences for the whole race" (p. 380).

² Among others may be mentioned Dr. Gore, Bishop of Worcester (*Expos. Times*, April, 1897), Dr. Driver (*Genesis*, pp. 56-7), Dr. J. R. Illingworth (*Bampton Lects.*, pp. 143 ff., 154 ff.), Principal Griffith-Jones (*Ascent through Christ*, pp. 138 ff.).

on the Darwinian view of his origin. Be the starting-point as low as one chooses, there is necessarily, it is claimed, a stage in man's development when moral sense awakens, and rudimentary ideas of right and wrong begin to be formed. Then the crisis arrives. As endowed with freedom,¹ the individual can choose good and evil, and, with wrong choice, sin begins.

The question may be postponed whether, on a consistent Darwinian basis—man's mental and moral equipment being viewed as a simple development from that of the animals—there is any satisfactory explanation possible of the rise of moral ideas, or real place left for self-determining freedom. But, apart from such questions, involving the problem of the origin of spiritual personality, can it be held that this theory really yields an idea of sin adequate to the Christian conception? Or does it not rather take the foundation from that conception? It seems very plain that it does so.

The picture with which this theory starts is that of a being in a *condition of transition* from animal to man—"a miserable, half-starved, naked wretch, just emerged from the bestial condition, torn with fierce passions, and fighting his way among his compeers with low-browed cunning."² Reason and conscience are yet in germ, and animal impulses rule. Is this a state which, from the Christian point of view, can ever be regarded as normal for the moral being? Is it a condition in which we should expect a God of holiness and Fatherly love to launch His moral creature on the world? The thoughts will not harmonise. It does not touch the essential difficulty to

¹ Dr. Gore grants that, if science persists "in denying that man has any freedom of will, and, therefore, that he can have any responsibility for his actions—if science persists in denying that, then science and the Bible can never agree together" (*loc. cit.*).

² *Christian View of God*, p. 180. Cf. *God's Image in Man*, pp. 208-9.

say that it is a state to be *outgrown*. What morality affirms is, that it is not a state a moral being ought ever to be in. Moral law, it has been seen, demands not only right action, but a right state of the *soul*—a subordination of passion to reason, control of lower impulses, purity of motive and disposition, a right direction of the will towards God. Of this the state described is the diametric opposite. It is not simply that this right state is an *ideal* to which the developing being should aspire: it is a state in which he should be *now*, and always, according to the stage of his growth. Christ's "Thou shalt love the Lord thy God," etc.¹ binds man absolutely. He admits of no exceptions. To bear the image of God, as He conceives of it, is not merely to possess in the nature the elements of that image—rationality, freedom, moral knowledge—it is to be a state positively conformable to that image. Sin, it was seen, is more than mere moral fault. It is, fundamentally, transgression of *God's* law, the breach of man's relation to *God*, contrariety in heart and conduct to the *divine Holiness*. How, then, shall we judge of the being whose nature is in violent turbulence, whose life is brutish, who has not even the glimmer of a right knowledge of God? What meaning can be attached to "sin" in the case of such a being? Man is in a wrong state to start with. Where is the leverage in nature that will ever lift him out of it? "Evolution"—"Natural Selection"—stand here powerless.

The reply given is—Yes, but man has *free-will*. He is not a creature of necessity, of environment, of circumstances. He has it in his power, as moral consciousness awakens, to choose the good and refuse the evil. Hence responsibility, and the possibility of sin. It is again pertinent to ask—How much "free-will" does naturalism leave to man? And, if naturalism be broken with, Darwin-

¹ Mark xii. 30.

ism may be given up at once. But, viewing the matter more nearly, one must be careful here not to impose upon himself or others with words. Man has, indeed, the endowment of freedom; without that moral life would be impossible. But it has already been seen that, in order to the exercise of freedom, there is needed a balance and harmony of nature: a state of soul which gives freedom opportunity to act. Freedom is not omnipotence. It is not power to act under any and every condition. There is a free, but there is also a fettered will. It is so even in Christian experience. St. Paul's searching analysis in Romans vii. is the experience of everyone here. "I find then the law, that, to me who would do good, evil is present. For I delight in the law of God after the inward man; but I see a different law in my members warring against the law of my mind, and bringing me into captivity under the law of sin which is in my members."¹ From this bondage only grace can deliver. How much greater the mockery of speaking of "freedom" in the case of a being emerging from the state of animalism, ignorant of God and goodness, the subject of powerful and ungoverned impulses—a freedom enabling him to check and conquer the lower tendencies in his nature, and live uniformly in accordance with the higher! The task set before such a being is an impossible one. The only consistent position here is frankly to declare, as is done by the bulk of evolutionists, that sin in the developing being is inevitable, but is *venial*, something to which no serious "guilt" can be attached.

The issue which arises here is very clear, and of supreme importance. Assuming that *the Biblical conception* has been correctly described as having for its presuppositions God's changeless holiness in His relations with man, moral law apprehended with sufficient clearness to show man

¹ Rom. vii. 21, 22.

his duty, the possibility of obedience, and sin as voluntary departure from rectitude, it can hardly be denied that evolutionary theory, as ordinarily presented, traverses that conception in every particular. It denies to man, as already shown, the possibility of sinless obedience, it leaves the greater part of what is considered as wrongdoing—lust, cruelty, bloodshed, etc.—outside the category of sin on the ground that the conscience of primitive man was not yet sufficiently developed to regard these things as wrong, it treats such transgression as man was capable of as venial, it deprives the acts of the character of *sin* through the absence of serious moral views of God.¹ It is futile to suppose that positions so incompatible can be combined into a unity of view entitled to call itself Christian.

3. We seem thus to be brought to an *impasse*, from which no outlet is evident, save, on the one hand, in the *surrender of the Christian conception of sin*, confirmed as that is by ages of deepest religious experience, or, on the other, in the *rejection of the doctrine of evolution*, which science well nigh universally accepts as the truth. Neither alternative can be entertained. Sin is far too real a fact, is bound up too surely with the experience of redemption in Christianity, to be thus summarily got rid of. If one took certain scientific writers strictly at their word, one would have to admit that, up to the present, evolution had not been proved at all.² But this is over modest.

¹ Cf. *God's Image in Man*, pp. 208-9.

² Prof. Thomson says: "There is no logical proof of the doctrine of descent" (*Dar. and Human Life*, p. 22, cf. pp. 26, 189. Cf. the admissions of Weismann below). It is striking to find both Mr. Darwin and his son and biographer in *Life and Letters*, iii. p. 25, announcing: "We cannot prove that a single species has changed." Mr. Thomson, comparing evolution and gravitation, says (p. 26): "We are aware of no facts contradictory of either." Not contradictory, perhaps, of evolution in the general sense, but, as his own pages show, abundantly contradictory of the specific Darwinian theory of evolution. (See below.)

The proof for some form of organic evolution, within limits, is peculiarly cogent. The problem, therefore, assumes a new shape. Granted that evolution is real, does Darwinism truly describe its process, and, if not, do the same difficulties arise on the newer, or modified conception of evolution which takes the place of the older? It is here, not in mediating attempts which surrender the essence of the Christian position, that a solution of the seeming antinomy must be sought.

One has only to study the newer phases of evolutionary opinion, as reflected in the works already mentioned, and in other recent literature, to become aware of the *remarkable, sometimes revolutionary, changes* which have taken place on this subject since Darwin first promulgated his theory of natural selection. The changes have been greater than most, even well-informed, people realise.¹ They leave no part of the theory untouched—variability, struggle for existence, natural selection, slow gradations, heredity, purposefulness—and transform it from within in such a way as largely to alter the perspective created by it. The crucial point of all—as stated at the outset—is the sufficiency of “natural selection,” or of any “causal-mechanical” view, to account for organic life, growth, structure, adaptation, the ascending order and correlation of nature’s kingdoms, the crowning appearance of man. It is precisely here that the changes of opinion are most instructive.

Reference was earlier made to the prevailing “natural-

Of plants, Prof. D. H. Scott observes that, “as regards direct evidence for the derivation of one species from another, there has probably been little advance since Darwin wrote” (*Dar. and Mod. Science*, p. 200).

¹ Otto’s book, *Naturalism and Religion*, is of special value as showing the extraordinary variety of developments of opinion on the evolutionary theory in scientific circles, especially on the Continent. “The differentiation and elaboration of Darwin’s theories,” he says, “has gone ever farther and farther; the grades and shades of doctrine held by his disciples are now almost beyond reckoning” (p. 94).

ism" of the volume in commemoration of Darwin (*Darwin and Modern Science*); a scarcely less characteristic feature is its pervading *assumptiveness*. The sufficiency of "natural selection" to account for the phenomena of organisms (with much else, as the origin of life from the non-living),¹ is *assumed*, not proved; this on the avowed ground that only natural causation can be admitted. An example or two may be taken from Weismann. We cannot bring forward formal proofs in detail, he says, "yet we must assume selection, because it is the only possible explanation applicable to whole classes of phenomena. . . . *We must accept it because the phenomena of evolution and adaptation must have a natural basis, and because it is the only possible explanation of them.*"² This is precisely the point—*Does it explain them?* On the well-known difficulty of small initial variations, he remarks—"To use a phrase of Romanes, can they have *selection-value?* . . . To this question even one who, like myself, has been for many years a convinced adherent of the theory of selection, can only reply: *We must assume so, but we cannot prove it in any case.*"³ On sexual selection: "An actual proof of the theory of sexual selection is out of the question, if only because we cannot tell when a variation attains to selection-value. . . . *We must assume this [advantageousness] since otherwise secondary characters remain inexplicable.*

¹ Weismann, like Darwin, Huxley, Spencer, Haeckel, and others, while admitting the impossibility of proof, "holds fast" to belief in an original "spontaneous generation" (*Evol. Theory*, i. p. 370; cf. Huxley, *Critiques and Addresses*, p. 239). Prof. Thomson says: "Though many thoughtful biologists, such as Huxley and Spencer, Nägeli and Haeckel, have accepted the hypothesis that living organisms of a very simple sort were originally evolved from not-living material, they have done so rather in their faith in a continuous natural evolution, than from any apprehension of the possible sequences which might lead up to so remarkable a result" (*Bible of Nature*, p. 116). Cf. his quotation from Bunge (p. 99).

² *Op. cit.*, p. 6. Italics are his.

³ P. 26.

The same thing is true in regard to natural selection. It is not possible to bring forward any actual proof of the selection-value of the initial stages, and the stages in the increase of variations, as has been already shown."¹ Religion, plainly, is not the only thing which makes a demand on faith.

Darwinism is essentially a theory of natural selection acting on accidental variability.² It is not disputed that variability, struggle for existence, natural selection, and heredity, have much to do with the process of evolution; Darwin's greatness lies in having made this clear. What is questioned is, the *sufficiency* of these causes, and the *adequacy* of the Darwinian interpretation of their operation. The chief significance of the change in recent times would seem to be that, whereas in Darwinism, the stress was laid mainly on *external* causes—nature, as it were, through selection, under the keen competition for existence, carving the organism into shape out of "the raw material" (Professor Thomson's phrase) furnished to it by variation, the tendency in newer thought is to transfer the secret of evolution more and more to causes *within* the organism, and to regard the external causes as subsidiary—stimulative, discriminative, eliminative—not primary or originative. With this goes, naturally, a larger recognition of definiteness, direction, and correlation in variation, and surrender of the idea that evolution must necessarily proceed by extremely slow and insensible degrees. The bearing of

¹ Pp. 49–50. Similarly in mental evolution, Dr. C. Lloyd Morgan writes that "presumably the majority of those who approach the subjects discussed in the third, fourth and fifth chapters of *The Descent of Man*, do so "in the full conviction that mental phenomena, not less than organic phenomena, have a natural genesis (*Op. cit.*, p. 444).

² Cf. Darwin, already quoted, *Life and Letters*, ii, p. 369. Weismann says: "Nature preserves in the struggle for existence all the variations of a species at the same time, and in a purely mechanical way, if they possess selective value" (*Dar. and Mod. Science*, p. 32).

such change of standpoint on our immediate subject will, by and by, be apparent. Meanwhile, a few illustrations may be offered of the extent of the change.

Darwin believed that, while much had been adduced by others to render probable the *fact* of evolution, it was reserved for himself to put the theory on a secure basis by showing the *how* of the process in natural selection.¹ Now, on all sides, the admission is made that, while the *fact* is certain, the *how* is yet to seek. "The fact of evolution," says Professor Thomson, "forces itself upon us: the factors elude us. There can be no dogmatism."²

The difficulty begins with *variation*. "*The kernel of the riddle*," Weismann says truly, "*lies in the varying*."³ It is easy to speak of "useful variations," but how do the variations come to be there, to arise just when wanted, to persist in a definite direction—say the formation of an eye or an ear, or of the electric organ of certain fishes? Is this explicable without direction—without reference to an inner teleology? Weismann himself asks: "How does it happen *that the necessary beginnings of a useful variation are always present?* . . . Natural selection cannot solve this contradiction: it does not call forth the useful variation, but simply works upon it."⁴ "Correlation"

¹ *Origin of Species*, Introd.

² *Bible of Nature*, p. 153. Weismann says: "The *How?* of evolution is still doubtful, but not the *fact*, and this is the secure foundation on which we stand to-day" (*Evolut. Theory*, i, p. 3). Huxley repeatedly made the same admission (cf. art. "Evolution" in *Ency. Brit.*, viii, p. 751). In an address at Buffalo (Aug. 25, 1876) he said: "We *know* that it [evolution] has happened, and what remains is the subordinate question of how it happened."

³ *Dar. and Mod. Science*, p. 27. Prof. Bateson, a high authority, quotes from Samuel Butler (*Life and Habit*, p. 263): "To me it seems that the 'Origin of Variation,' whatever it is, is the only true 'Origin of Species,'" adding: "And of that Origin not one of us knows anything" (*Dar. and Mod. Science*, p. 99).

⁴ *Op. cit.*, p. 27. Weismann speaks of the argument as "reasoning in a circle, not giving 'proofs.'" Prof. Thomson quotes Bateson: "We

also has to be taken into account, with the new problems connected with heredity. These will come up after.

The difficulty thus arising for natural selection is increased when it is discovered, as seems granted by most writers in the Cambridge volume,¹ that the variations which have selection-value, are not always, as Darwin and Weismann assume, exceedingly slight and rare ("imperceptible," "minute," "insensible," "infinitesimal,"²) but are sometimes *abrupt, discontinuous, considerable* ("mutations" of specific types)—that, in short, evolution proceeds by "leaps" as well as by slow processes. These "lifts" in nature, as Professor Thomson calls them,³ will be found, if conceded, to change the entire problem of origins. For here the causes lie obviously within, and are not tied to long periods of time. A further weighty fact, pointing in the same direction—one which Darwin was led finally to admit—is the existence of many structures which bear no relation to utility—which cannot therefore, as Darwin grants, "be accounted for by any form of selection, or by the inherited effects of the use and disuse of parts."⁴

Darwin's theory was originally suggested by the reading of Malthus, and one of its chief pillars has always been

are continually stopped by such phrases as, 'If such and such a variation took place and was favourable,' or, we may easily suppose circumstances in which such and such a variation, if it occurred, might be beneficial, and the like. The whole argument is based on such assumptions as these—assumptions which, were they found in the arguments of Paley or of Butler, we could not too scornfully ridicule" (*Dar. and Human Life*, p. 100).

¹ Cf. the essay of De Vries, and *passim*, pp. 179-81, 200, 225, 242, etc. See especially on the views of Grand'Eury and Zeiller, pp. 221-2.

² Cf. Weismann (*Op. cit.*, p. 23; Bateson, who dissents, p. 99).

³ Cf. his *Darwinism and Human Life*, pp. 104 ff.; *Bible of Nature*, pp. 155-8.

⁴ *Descent of Man*, ii. p. 387; i. p. 152; *Life and Letters*, iii. p. 159. Nägeli is quoted as saying: "I do not know among plants a morphological modification which can be explained on utilitarian principles" (*Dar. and Mod. Science*, p. 218).

held to be the doctrine of *the struggle for existence*. It is an extraordinary change to find it questioned by Korschinsky and his "moderns" whether this "struggle" exists in anything like the degree supposed,¹ or has the relation to evolution that the Darwinian theory imagines. Korschinsky's conclusion is that, where struggle occurs, "it prevents the establishment of new variations, and in reality stands in the way of new developments. It is rather an unfavourable than an advantageous factor."²

Lastly, criticism is directed on the prime agency of the theory, *natural selection* itself, with the view to demonstrate its insufficiency for the enormous tasks assigned to it. Natural selection, it is pointed out, is not a creative but an eliminative agency. It prunes the tree of life, but itself produces nothing.³ The power ascribed to it of infallibly picking out infinitesimal favourable variations and pre-

¹ In reading the descriptions of the prodigious fecundity of the lower organisms, one is reminded of Sir Arch. Alison's statement, *à propos* of the British Sinking Fund (quoted by Walker, the American economist) that "a penny laid out at compound interest at the birth of our Saviour would in the year 1775 have amounted to a solid mass of gold 1,800 times the whole weight of the globe." The penny was not laid out in the way imagined. So the enormous increase in animal life in geometrical ratio is not realised: but the elimination is not, for the most part, through internecine struggle—indeed takes place before the stage of struggle is reached—and survival or fatality has little to do with the infinitesimal advantages of individuals. From another side a softening of the picture is introduced by the introduction of the element of altruism. Nature is not wholly selfish (cf. Thomson, *Bible of Nature*, pp. 174 ff.).

² Cf. Korschinsky's whole statement for himself and the newer school in Otto, *Op. cit.*, pp. 182-4.

³ Weismann treats this common objection as "senseless" (*Dar. and Mod. Science*, p. 61), but it is not obvious how he weakens its force. De Vries says truly: "Natural selection acts as a sieve; it does not single out the best variations, but it simply destroys those which are, from some cause or another, unfit for their present environment" (*Ibid.* p. 70). Prof. Thomson says: "Natural selection explains the survival of the fittest, but not the arrival of the fittest" (*Bible of Nature*, p. 162). "Natural selection prunes a growing and changeful tree. Natural selection is a directive [?], not an originative, factor" (*Dar. and Human Life*, p. 193).

-serving them for many (perhaps millions of¹) generations till new favourable variations are added, is held to lie beyond human credence. A point is made of the palpably inutility character of most incipient variations in the evolution of organs ultimately useful.² Stress is laid by Spencer on the complexity and balance of variations ;³ by others on the narrow limits of variation, and relative fixity of types ; by others on the indiscriminateness of nature's methods of destruction (" what advantage," it has been asked, " could it afford to an insect that was about to be swallowed by a bird, that it possessed a thousandth fragment of some property not possessed by its fellows ? "); by others on the effects of pairing, on hybridity, etc. Answers more or less plausible may be given to some of these objections, but their cumulative effect is very great. Evolutionist writers claim large rights of scepticism for themselves. They must permit some right of scepticism to others when asking them to believe that a blind force of the kind supposed is really the main explanation of the beauty and adaptation with which the world is filled.⁴

The tendency in these changes, as already said, is to transfer the primary causes of evolution from without to within the organism, and to recognise a definite direction in the working of evolutionary forces. This again leads back to the *teleology* which Darwinism had rejected. Here, fundamentally, is the objection which must always be

¹ Thus Darwin. See above.

² It is not a sufficient reply to say that " we cannot tell " whether the smallest variation, in such a case, may not have a selective value. *Prima facie* it has not, and our ignorance cannot warrant us, in the interest of a theory, in assuming that it has.

³ Cf. *Principles of Biology*, Sect. 166.

⁴ The extent to which natural selection, as main cause, is given up by newer evolutionists may be seen in Otto's work above cited, pp. 154, 158, 184, etc. A trenchant popular criticism in a recent book, *Science, Matter and Immortality*, by R. C. Macfie, chap. xix., may be referred to.

taken to Darwin's, as to every mechanical, theory of nature, that it asks from unintelligent, unguided, forces work that can only be accomplished by mind. "Wherever we tap organic nature," Professor Thomson is fond of quoting from Romanes, "it seems to flow with purpose."¹ Does it only *seem*? This is a position in which thinking minds can never rest. The attempt to make it appear otherwise, it has just been found, breaks down on trial. "If there is Logos at the end" of the process (in man's reason), says Professor Thomson truly, "we may be sure that it was also at the beginning."² Not, however, at the beginning only, but as a present, directive principle all through. If so, a "causal-mechanical" view cannot be accepted as even an adequate "modal" interpretation of organic nature. Science is under no call to accept it as such, for it does not truly explain the facts. What would be the "modal interpretation" of the writing of a book, or the making of a machine, which did not recognise the presence of the constructive, guiding mind?³ This also, if in terms it sometimes seems denied, is in reality accepted by the writer just quoted.⁴ Mechanical categories alone do not satisfy.

¹ *Bible of Nature*, p. 25; *Darwin and Human Life*, p. 196.

² *Bible of Nature*, p. 86; cf. pp. 26, 242.

³ It is surely an unwarrantable narrowing down of the idea of science to say that it can take no account of teleology. Paley's watch may be out of date as an analogy to nature's processes, but could a "scientific" explanation be given of a watch which took no account of the part mind played in its construction? If teleology is a fact, why is it unscientific to recognise its presence in nature, even while seeking for secondary causes?

⁴ Cf. the fine pages in the close of *The Bible of Nature*, pp. 238 ff. One passage may be quoted. "May it not be that mind lies in the egg—not inactive like a sleeping bird—but doing for the egg what the mind does for the body, unifying, regulating, in a sense directing it, not insinuating itself into the sequences of metabolism, but, so to speak, informing them and expressing itself through them? We mean that the regulative principle, the entelechy, which many embryologists find it necessary to postulate, in giving a more than chronological account of an individual development, is that resident quality of a living organism which in its full expression we call mind (p. 245).

Science "gives an account of the tactics of nature, but never explains its strategy."¹ It is necessary to interpret nature through purpose. God is "the real agent in nature and in all natural evolution."

The bearings of these altered views on the nature of man and the fact of sin will be considered in a succeeding paper.

JAMES ORR.

¹ P. 239.