JOURNAL OF

THE TRANSACTIONS

OF

The Victoria Institute,

OR

Philosophical Society of Great Britain.

EDITED BY THE HONORARY SECRETARY.

VOL. II.

LONDON:
(Published for the Institute)
ROBERT HARDWICKE, 192, PICCADILLY, W.
1867.

ORDINARY MEETING, March 18, 1867.

The Rev. Walter Mitchell, Vice-President, in the Chair.

The minutes of the previous Meeting having been read and confirmed, it was announced that G. T. Miller, Esq., 59, Portland Place, had been elected a Member of the Institute.

The discussion upon Mr. Warington's Paper, read at the last Meeting, "On the Credibility of Darwinism," was resumed by Mr. Reddie; who read the following Paper in reply to that of Mr. Warington :—

ON THE CREDIBILITY OF DARWINISM. (*In reply to Mr. Warington's Paper, read March 4th,* 1867.) *By* James Reddie, Esq., *Hon. Sec. Vict. Inst.*

ON the present occasion, Sir, I could have wished that Mr. Warington and myself had changed places. I almost wish, I mean, that I could have written and read his paper, that I might have had the satisfaction of hearing how he would have criticised it. He will not, I hope, misunderstand the double compliment I mean most sincerely to pay him, in saying this now. Could I have undertaken to write in defence of Darwinism, I would have wished to write as plainly as Mr. Warington has done. And if I wished, on the other hand, to pull all the arguments he has advanced to pieces, I should like nothing better than to let loose *his* critical faculty upon the paper it is now our duty to discuss. I think, Sir, it is a happy circumstance that in this Society such an impartial and temperate paper should have been read upon such a subject; and I most sincerely trust that the tone of the discussion throughout will be that observed by Mr. Warington, whether we agree or disagree with the views he has advanced. I have thought it right to make these preliminary remarks, all the more because I so thoroughly *disagree* with Mr. Warington

from first to last, and am now about to move, as it were (as they say "in another place"), a direct negative to all the principles, assumptions and arguments throughout his paper. I must, however, reverse his way of putting the subject before you. I think Darwinism incredible, not because I can first prove it to be impossible, but because I hope to show that it is inharmonious, inconsistent and inadequate; and that it is therefore, if not "impossible," yet utterly improbable, and that it ought to be at once rejected as an *irrational* hypothesis, and altogether *incredible*. You will observe that I disclaim being able logically to prove that Darwinism is "impossible," while Mr. Warington has boldly claimed to have proved it to be possible. Well, Sir, in my opinion he has gone quite beyond the range of *à priori* possibility in the case, in even attempting to do what he thus has claimed to have done. I can perfectly understand his *believing* the theory to be possible as he has put it before us. Darwinism *plus* Deity must, no doubt, be possible as a mere conception of the mind,—*i. e.*, if we assume that God has chosen so to work; but Darwinism, pure and simple, as the French say, is a very different matter. Nor must Mr. Warington object to my drawing this distinction. I assure him I intend to steer clear of all *odium theologicum*—as I trust others will of all *odium scientificum*—in discussing this vital question; but at the same time I have no intention of avoiding—and I am sure it will not be expected that I should avoid—speaking perfectly freely on the subject, and bringing out the logical issues to which the hypothesis leads, not only in my opinion as its opponent, but in that of some of its own most zealous advocates. At the same time I beg to say that I shall touch very lightly upon that most important issue, and as far as possible (in order to do mere justice to the argument) I shall limit myself to the issues raised by Mr. Warington himself. I shall do so, if for no other reason, because, from past experience in discussing Darwinism with others, I know how skittish Darwinians can be; and I wish to impress it upon the members of the Institute that they must not conclude, even if we refute Mr. Warington, that it will be admitted we have refuted Darwinism, but only *his* way of supporting it. Even Mr. Warington himself frankly tells us in the concluding sentences of his able paper, that "Mr. Darwin's own book is professedly but a meagre abstract of the evidence on behalf of the hypothesis he has in store. The full statement has long been promised, and, in respect to one important part of the subject, is announced as now 'preparing for publication.' It were rashness in the extreme to jump to any definite conclusion until this

fuller statement has been seen and weighed. And even then much further investigation into facts will probably be needed before a final decision can be made." "Meanwhile," Mr. Warington—with, in my opinion, the extreme rashness he has thus very sensibly deprecated—does "jump to a conclusion," in the absence of the coming evidence, and "submits that Darwinism is *certainly* to be maintained as *credible*."

I have said that I shall reverse the order, as well as endeavour to negative the conclusions, of Mr. Warington's several propositions. But in the first place I must touch upon his preliminary matter—his principles of philosophizing and the analogy he adduces—before entering upon the more immediate question he has brought before us. Well, Sir, here again, I am unfortunately at issue with Mr. Warington in some important respects. He appears to me to have quite thrown over the very principles of inductive science in his opening sentences. He is positively in love with hypothesis, theorizing and speculation. We need not, therefore, be surprised that "to love and be wise" has been beyond his power. He concludes that mainly, if not exclusively, "it is through hypothesis that truth is ultimately attained;" and not only so, but throwing Bacon's cautious and philosophic wisdom to the winds, he actually believes that we positively cannot collect together and store up a knowledge of the facts of nature, without first of all determining "*what facts* especially need to be accumulated and sought after." This mode of collecting facts which have been sought after in order to meet the needs of a foregone conclusion, must remind us of the temple, alluded to by Bacon, in which were to be found the votive tablets of those who had escaped the peril of shipwreck, and which were appealed to as proving the power of the gods to which they had been offered, but where the portraits of those who had perished, after making the very same vows, were altogether absent. (*Nov. Org.*, i. 46.) We have had some experience, too, since Bacon's day, of the effect of this method of seeking for and tabulating facts to suit some favourite hypothesis. And I have sufficiently expressed my opinion of the vicious nature of this unphilosophical mode of "going on for years collecting and arranging in the mind all newly-discovered facts, with sole reference, for instance, to the nebular hypothesis," only recently given up.* But still I agree with Mr. Warington to this extent, that men are prone to theorize and speculate, though in my opinion they often do so in

* *Scientia Scientiar.*; *Journ. of Trans. of Vict. Inst.*, vol. i. p. 21.

detriment to the true advancement of real science and in spite of all Bacon's principles and warnings. And that being the case, I quite accept as a necessity that we must look these theoretical speculations in the face, and, if we can, refute them.

I now come to the consideration of the analogy of the theory of universal gravitation, adduced by Mr. Warington as an example for our guidance in testing Darwinism, as he evidently intends it should be tested, by what he considers the most rigid of scientific tests. In my opinion, this analogy has been most happily chosen. Chosen happily by Mr. Warington, because the choice proves how thoroughly he means to test the theory the credibility of which he pleads for. Chosen happily, also, Sir, because you preside over our deliberations, who are most competent to estimate both the abstract and the relative merits of the proofs relied upon for the establishment of the two theories thus placed in comparison. And happily chosen, I beg leave to add besides, on my own account, because of the way in which my name has recently been publicly mixed up with the Newtonian hypothesis in connection with this society. I allude to an article especially in the *Saturday Review* of 12th January last, and I am glad of the opportunity now given me to show to our members that I have some reason on my side. The theory of universal gravitation being a subject to which, like yourself, I have given considerable attention, (though we have viewed it from different stand-points—I as a sceptic, and you as a believer, —and at present, perhaps, we have therefore naturally arrived at different results,) I am able to say that the analogy sought to be established by Mr. Warington is probably much more applicable than he imagined to the theory of Mr. Darwin. Only in the first test does the analogy entirely break down. We can prove or disprove, by absolute mathematical demonstration, the possibility of universal gravitation. But, as I have already said, this we certainly cannot do with respect to Darwinism. But as regards the other three tests—adequacy, consistency, harmoniousness—the analogy "runs on all fours." When once we get over the question of "possibility," these tests can be applied equally to both the hypotheses. Before, however, I proceed to examine how these tests have been or may be applied to Darwinism, there is a prior part of the analogy to be glanced at. We must not forget, then, that the present distinguished naturalist, Mr. Charles Darwin, is not the first propounder of what we now call "Darwinism." I am not even quite sure that the theory of "natural selection,"—as explanatory of the resultant hypothesis of developmental transmutation of species,—can fairly be attributed to him as its sole

author, except as regards this new name, he has no doubt furnished the theory. But, at any rate, his grandfather, Dr. Darwin, preceded him; as did also Lamarck and Monboddo, to mention no other more ancient but less-known names, who have held the same views as regards all essential results, though they failed to give precisely his explanations of how the results were brought about. In the notorious anonymous volume, *The Vestiges of Creation*, we had essential Darwinism put forward most confidently, without Mr. Darwin's carefully selected and ingeniously varied and modified explanations; which have since been developed, in support, however, we must always remember, of conclusions arrived at previously. But Dr. Louis Büchner, in his *Kraft und Stoff*, distinctly claims to have put forward views identical with those of Mr. Darwin seven years before *The Origin of Species by Natural Selection* was published, though he recognizes the value of the "most convincing proofs" which he says Mr. Darwin has furnished in support of those views. (*Force and Matter*, p. 91, note.) Well, we have a very close analogy to this in the history of universal gravitation. On a recent occasion, when Dr. Gladstone read a paper here, I pointed out, by citations from the *Philosophical Transactions*, that both Hook and Halley had preceded Newton by ten or twelve years in starting the identical theory, though neither of them produced a *Principia* in order to establish it on mathematical principles.* That is, of course, Newton's great merit; just as the natural-selection explanations of Mr. Darwin are his. I ought, perhaps, to add that even Kepler is said to have also had some idea of the same kind as Newton, as to the influence of the sun in regulating the motions of the planets; but in truth Kepler's idea was not the same. He considered the sun had merely a directive influence, and not a force of attraction, as is explained in Whewell's *History of the Inductive Sciences*. (Vol. ii. p. 19.) In that admirable volume we are also told of the remarkable manner in which the *Principia* of Newton was looked and longed for, and how it was at once accepted whenever it was published. How some believed in the theory, even before the book came out—just as some now do in Darwinism, while yet only expecting Mr. Darwin's coming treatise, which is to make all clear! and how some—including even the acute philosopher Locke—believed in universal gravitation after the *Principia* was published, while acknowledging that they could not follow the steps of the reasoning by which it was mathematically established. I think it is very probable that

* *Journ. of Trans. of Vict. Inst.*, vol. i., p. 414.

something like this will also be the case when Mr. Darwin's *magnum opus* makes its appearance.

But these analogies as to the history merely of these two theories, however close, are of less consequence than the analogy that obtains respecting the groundwork and basis of the theories. "Is gravitation [Mr. Warington asks] a *real* cause capable by its action of controlling planetary motion? *i. e.*, is the hypothesis possible?" And so, he also asks, "Is Mr. Darwin's hypothesis *possible?*—Are the elements involved in it real elements capable of producing the *kind* of effects he ascribes to them?" I am sure, he will see, that I am giving his argument every possible advantage in thus keeping it constantly in juxtaposition with his chosen instance and the most popular science of modern times. And I will admit that just as we all know that a stone or an apple falls to the ground by its weight, and that therefore, so far, "gravitation *is a real cause*;" so we are all positively quite aware that "*the kind* of effects" Mr. Darwin lays stress upon, are certainly produced by climate, use and disuse, by growth with reproduction and inheritance, and by the external conditions of life and the consequent struggles for existence among plants and animals. I never heard of a man that denied an apple would fall to the ground; and I cannot conceive how those who believe in the unity of the human species can possibly deny against the evidence of their own eyes, that mankind at least have diverged and developed marvellously in all directions away from the original type of Adam and Eve, whatever we may consider their type to have been. But it is one thing to admit that an apple falls, and another to conclude that the moon, which does not fall, is under the same influence. So, it is one thing to admit that all mankind have descended from a common stock, and quite another *therefore* to conclude that man has descended from the same common stock as goats and monkeys. But, now, it is here that the analogy halts. Granted the first and second laws of motion, as propounded by Stevinus and accepted in the *Principia*, and granted that gravitation is a constant force; it is perfectly possible—and *I* think perfectly easy—to demonstrate whether or not a gravitating body could revolve round a centre of attraction without ever falling —that is, to prove or disprove the *possibility* of gravitation as a real cause capable of controlling planetary motion;—but I am not aware of any attempt to do this by Sir Isaac Newton or any of his followers. I say the possibility of universal gravitation might thus be tested by mathematical demonstration; but I do not in the least see how Darwinism ever can be. It would be unreasonable to require that *it* should be

established by such a test,—as unreasonable, I humbly think, as it was in the other case to dispense with such a test.

I therefore pass over the test of possibility as applied to Darwinism, to apply the other tests of harmoniousness, consistency and adequacy. And again, I must revert to the analogy of what Mr. Warington thinks established the adequacy of gravitation,—the discovery of the planet *Neptune*,—and which I will venture to say is strictly analogous to what was supposed to be the discovery of "the missing link between man and apes" in the famous Neanderthal skull, appealed to so confidently in the *Antiquity of Man* by Sir Charles Lyell, and in *Man's Place in Nature* by Professor Huxley. Again, I think the analogy will be found to run admirably on all fours. I am glad to follow Mr. Warington in his chosen analogies, and I am doing my best to complete them in thorough detail. Mr. Warington appears to have taken his view of the discovery of *Neptune* from Sir John Herschel's *Outlines of Astronomy*. But he ought to know that Messrs. Peirce and Gould, the American astronomers, have written also on the subject. From Mr. Gould's *Report on the History of the Discovery*, published in Washington in 1850, it appears that the tables used for the computations of the places of *Uranus* were calculated by M. Bouvard in 1821, and are now known not to represent the places of that planet, which was observed twenty times between 1690 and 1771, but was then mistaken for a fixed star. I cannot, however, here pursue the whole history of the discovery of *Neptune*. It is enough to say that certain irregularities or perturbations in the observed motions of *Uranus* led to the idea (which was shared by M. Bouvard himself) that these were caused by the influence of some exterior planet. Without going into the question of priority of discovery between Mr. Adams and M. Le Verrier, I shall here give you their respective computations of the mass, eccentricity, mean distance, period of revolution, and longitude of perihelion, of the supposed exterior planet, in a tabular form, alongside the figures deduced by Messrs. Walker and Peirce from actual observation of the planet *Neptune* after it was discovered. Thus:—

	Theoretical.		Actual.
	Adams.	Le Verrier.	Walker and Peirce.
Mass of Neptune	$\frac{1}{6,666}$	$\frac{1}{9,322}$	$\frac{1}{19,840}$
Eccentricity	0·12062	0·10761	0·00872
Mean distance from Sun	37·247	36·154	30·037
Period of revolution	——	217·378 yrs.	164·618 yrs.
Longitude of perihelion ...	299°·2	284°·7	47°·2

The mass, it will be observed, of M. Le Verrier, is more than twice, that of Mr. Adams nearly three times, the true one. The planet's actual distance falls short of its theoretical distance by about 500 millions of miles; its period of revolution is fifty years shorter; its eccentricity is only one-twelfth of the theoretical planet; and its longitude of perihelion in 1847 was only 47°, instead of 285° or 299°. The discrepancy as to the planet's heliocentric longitude I do not go into, as it would occupy too much time; and I think I have shown enough (all of which is probably new to Mr. Warington) to prove to him and all present, that the discovery of *Neptune* is not such a perfect confirmation of the certainty of the Newtonian hypothesis as he believes.* I must entirely object to bolstering up one theory in science by credulous appeals to other sciences, without investigation. It reminds me forcibly of the way in which idol-worship, that grossest of human absurdities, was maintained in its day, as described by the prophet Isaiah.†

But I must do Mr. Warington the justice to say, that in appealing to astronomy he only follows in the wake of Mr. Darwin himself, and of Professor Huxley and Dr. Büchner. But I doubt whether any of those Darwinians who thus make appeals to astronomy have paid much attention to that science. I am sure Mr. Warington is too candid not to make a frank admission, or to put me right, on this point as regards himself. But he must forgive me, if I am wrong; for I think I have good reason to come to this conclusion, when I find him saying in his paper, that "it would be impossible and absurd to discuss the motions of the fixed stars with the definition given that the fixed stars are those which never move," as if he were unaware that it is precisely on that assumption that the theory of "solar motion in space" was propounded by the first Herschel, and till recently had been the conclusion come to by all astronomers.‡ But Mr. Warington goes boldly beyond most people in his mode of "sticking up," if I may so say, for the astronomy of the day. Even if *Neptune* had *not* been discovered, his faith would not have been shaken, however perturbed the planet *Uranus* might be. He is quite prepared to assume that the perturbations might be caused by some *invisible* body; and, of course, upon that hypothesis, the planets may move as erratically as they please, and we may always have an invisible, but quite conceivable cause, to explain the whole matter! Upon this system of theorizing, it is quite

* Vide *Discovery of the Planet Neptune.* By J. Von Gumpach; *in loc.*

† *Is.* xli. 7. ‡ Airy's *Lectures on Astr.*, 4th ed., p. 173. *Vide*, also, *Journ. of Trans. of Vict. Inst.*, vol. i., p. 27.

ridiculous to take the trouble to discover new planets! But surely this is proving or assuming too much; and certainly, if we may reason thus, the discovery of *Neptune* was supererogatory! Apparently, Mr. Warington is not aware that there have been other *hitches* about gravitation; and that M. Le Verrier some time ago, in order to keep the solar system in gear upon the Newtonian hypothesis, was obliged to have recourse to this same mode of proof, and to invent an *invisible* "ring of asteroids between the sun and Mercury, the aggregate mass of which was comparable to that of Mercury; and another ring of asteroids near the earth equal to a tenth of the earth's mass," &c. I quote this from Mr. Hind's letter to *The Times* of 17th September, 1863. And I must further remind Mr. Warington of another discovery, made by our own astronomer, Mr. Adams, namely, that his predecessors had all omitted, in computing "the acceleration of the moon's mean motion," to allow for the effect of the sun's disturbing force when acting in the direction of a tangent to the moon's orbit. An account of this is given in Lord Wrottesley's address, as President of the British Association at Oxford, in June, 1860. On this point there were three great mathematicians, Adams, Airy, and the late Sir John Lubbock, on one side, with three equally distinguished names, MM. Plana, Pontécoulant, and Hansen, on the other; and strangely enough it is admitted by the English mathematicians, and by Lord Wrottesley, while they declare Mr. Adams to be right, that all the calculations come out more accurately when the sun's influence upon the moon is omitted, which it certainly ought not to have been, if the moon is subject to the sun's attraction! *

It is, however, notwithstanding such facts as these, that Mr. Warington makes his appeal to universal gravitation; and that Mr. Darwin says, "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." † And so, Professor Huxley, in *Man's Place in Nature,* is "fully convinced that, if not precisely true, Mr. Darwin's hypothesis is as near an approximation to the truth, as, for instance, the Copernican hypothesis was to the true theory of the planetary motions." Lastly, Dr. Büchner, as a frankly avowed atheist, gives us this extraordinary opening to his chapter on *Primeval Generation* :—"There was a time when the earth—a fiery globe

* Vide *Current Phys. Astr.*, in loc. (Hardwicke.) † *Orig. of Species*, p. 525.

—was not merely incapable of producing living beings, but was hostile to the existence of vegetable and animal organisms." But afterwards, "with the appearance of water," he tells us, "organic life developed itself"! * Then at Nottingham last year, in Mr. Grove's address, while we had much the same sentiments repeated as to "the self-evolving powers of nature," and the doctrine of continuity, we had actually gravitation questioned, although Mr. Warington has once more made this appeal to the discovery of *Neptune* as proving the truth of the theory, I very much fear without going into the merits of that discovery. And just so was a confident appeal made by Sir Charles Lyell and Professor Huxley to the discovery of the Neanderthal skull, as an evidence that there probably was some low-caste, half-human creature, intermediate between man and apes (which, of course, there might have been without proving transmutation from the one into the other); but upon investigation by Dr. Barnard Davis, it was found that the Neanderthal skull proved nothing, being evidently an abnormal development, caused by synostysis or ossification of the sutures, and that similar skulls, known to be the skulls of modern men, are in our museums.

Dismissing, then, Mr. Warington's chosen analogy as worthless, I come to his direct arguments in favour of Darwinism. Mr. Warington, I think, very fairly states one of the main issues thus:—"That species grow and reproduce, and that they pass on their characteristics by inheritance, and that they are liable to variation is admitted by every one. The point at issue is whether they can so pass on and accumulate their 'variations' by inheritance as in the end to bring about specific differences," *i.e.* new species. Of course it is obvious that, in order to settle this point, we must have a definite meaning for the word "species." Well, Sir, I think I can furnish a meaning that, although somewhat absolute, will not be questioned, at least by Mr. Warington, namely this:—"The only fair definition of a species is a race of living beings possessing common characteristic differences from all others, which differences *at the present time are constant and inherent.*" This definition is Mr. Warington's own! It occurs just before the other quotation I have made from his paper. It is admitted that at the present time the characteristics of species are constant and inherent. Yet, according to the same authority, if species are liable to such variation as may accumulate and in the end bring about new species, then Darwinism is to be pronounced "possible"! But, as

* *Force and Matter*, p. 63. (Trübner & Co.)

we have already seen, that is *not* the case "at the present time." It is here that I find Darwinism *inharmonious* with itself, with truth and nature. Mr. Warington very properly asks, "Is the method in which Darwinism asserts species to have originated one which there is reason to regard as in accordance with the ordinary and known workings of God?" And he adds, "it is here we come to the theology of Darwinism." "Its relations to Scripture," however, "he purposely passes by, because he does not believe that Scripture was ever meant to teach us science." I also pass by the teaching of Scripture at present, not because I can admit it has not revealed to us a knowledge of the creation, but that I may meet Mr. Warington on his own and the lowest ground. He says, "In the first place, Darwinism assumes no cause, force or influence other than those *known* to be at work at the present day." And yet he has also said that, "at the present time," the characteristics of species are "constant and inherent." Well, Sir, I call that *inharmonious*. But he goes on, and speaks for others besides himself. He says, "*We* believe that all living things we now see about us were made by God, by means and under the influence of these causes involved in Darwinism;" nay, he says (and I am sure it must have astonished almost all who heard him): "*We* feel no difficulty in so believing;" and he then asks triumphantly, and (granted his assumptions) with admirable logic, "Why, then, should we feel difficulty in so believing as to all living things in the past?" I suppose I must astonish him in turn, if my answer is, That we do *not* believe in the Darwinism *of the past*, which he seeks to establish, because we do *not* believe, as he assumed, in the Darwinism *of the present*. We do not believe—though he told us we did—that God made all living things we now see about us by means of causes involved in Darwinism. Mr. Warington seems to think he proves this because we acknowledge God to be our Maker; and he has previously used similar language in this Institute, which was not then answered. Let me now say, then, that in discussing "Creation" philosophically, it cannot be admitted that *we* and all living beings we *now* see around us were "created" at all. There is a true sense in which we are all regarded as the creatures of God, and as therefore created by Him; but that language is inapplicable in philosophical discussion, in which we must be regarded as having been born by ordinary generation, and *not* "created." But as far as causes or influences are "known to be at work at the present time," man has always produced man, and animals always animals, "after their kind." We *know* nothing of

transmutation of species, and we therefore must reject this theory as not in harmony with what we do know of nature.

But it may be retorted that I have admitted that we do possess a knowledge of the "*kind* of effects Mr. Darwin lays stress upon"—such as the influence of climate, use and disuse, and external conditions generally, upon plants and animals; and if so, why not admit his whole theory? But I reply, it is not for us to go beyond our knowledge, or to make nature itself what we might call "harmonious." Our duty is to have our hypothesis in harmony with nature, such as it is. I admit these effects, but only within the limits of nature's laws, and according to what we know. I must exclude from my definition—again using Mr. Warington's words—"all mere transient sports, or temporary variations," as well as "all apparent varieties dependent upon situation, climate, &c." Holding that *exceptio probat regulam*, I reject a theory which turns exceptions into rule, and reverses those laws of nature which are known to be "constant and inherent at the present time." To have recourse to an analogy suggested by Mr. Warington's test of harmoniousness, we know that an occasional and delicate note of discord may even serve to increase the sweetest harmony; but were discords to become predominant in musical composition, all harmony would be destroyed. And so with the constant discords Darwinism seeks to make the rule of nature. They are utterly destructive of harmony.

Besides, let it be granted that varieties may become confirmed in their differences, and thereby become new species, does it then follow—as Mr. Wallace and others have argued elsewhere*—that therefore this process might go on *ad infinitum*, and new genera be also developed from species? Certainly not. You may call this granting the first step in the process, and therefore say I must grant the whole. But, I ask, will Mr. Warington, then, admit the same kind of argument as regards the first steps of his reasoning? Can he, for instance, or does Mr. Darwin in fact, attempt to get a beginning for the first few forms of life, or for the "one" to which analogy would lead him, without a breathing of life by the Creator into that first one, or into these few first forms? No. And, if not;—if you must have the Creator to give you your first form or forms of life, why limit Him to these? Why not begin with more than this one or meagre few? Why should He not have given life to "every living creature after its kind," *i.e.*, to every *genus* at least, or even to many

* *Anthrop. Rev.*; vol. ii., pp. cxxviii, cxxix.

primitive original species ? But, if not ;—if you will not grant this, then be logical, and make your own theory utterly "harmonious," as the more outspoken Darwinists do. These may be Mr. Warington's deductions from Mr. Darwin's book, or Mr. Darwin's own views;—but hear what Dr. Louis Büchner says :—

> The law of analogies ; the formation of prototypes ; the necessary dependence upon external circumstances which organic bodies exhibit in their origin and form ; the gradual development of higher organic forms from lower organisms ; the circumstance that the origin of organic beings was not a momentary process, but continued through all geological periods ; that each period is characterised by creatures peculiar to it, of which some individuals only are continued in the next period ;—all these relations rest upon incontrovertible facts, *and are perfectly irreconcilable with the idea of a personal almighty creative power, which could not have adopted such a slow and gradual labour, and have rendered itself dependent upon the natural phases of the development of the earth.* (pp. 84, 85.)

He goes on in another passage, in which he quotes Linnæus, just as Mr. Darwin does :—

> The work of nature, with its half-accidental, half-necessary products, has, on the contrary, been infinitely slow, gradual, and not premeditated. We nowhere perceive in this work an origin indicative of a personal will. "Nature," said Linnæus, "performs nothing *per saltum ;*" and, indeed, every new discovery in natural history confirms this axiom. The plant passes imperceptibly into the animal, the animal into man. All endeavours to fix the limits between vegetable and animal life have hitherto failed ; nor is there any existing insurmountable barrier between man and animal, of which we hear so much. (p. 85.)

This reasoning certainly makes Darwinism harmonious with itself; but it also brings it into discord with nature and with even the conception of Deity.

But now I come to the inquiry, is Darwinism *consistent ?* Here Mr. Warington rests as a kind of proof upon what Lord Bacon has pointed out as being the very A B C of theorizing. Mr. Warington thinks it the severest possible test to require that a theory should apparently agree with the facts or phenomena it has been invented expressly to account for. Why, of course, it must do so, more or less, or how could any sane man have either invented it, or others entertain it for a moment ? And certainly, of all the theories ever propounded by man, Mr. Darwin's is the most consistently inconsistent and most variously adapted so as to account for almost everything.

Naturalists are all at sea, it seems, as to what are varieties and species, or even, as to how orders and sub-orders are to be distinguished. But surely this is the exception and not the rule; and when they know better, and can divide more scientifically, this overlapping and confusion, upon which Darwinism wishes to found itself, would be got rid of. Mr. Warington himself admits that "in the majority of cases there is no such difficulty, the specific differences being clearly marked," though he tells us the intermediate varieties of brambles have sorely puzzled him. The gradations are sometimes so fine, that is, varieties are so very much alike, that they shade off into one another; and this, it is argued, is just what Darwinism would have expected. Very good, let us grant so much. But how then can we also grant, that when differences vary exceedingly—that is, when species or varieties are not at all alike—that this also should be just what Darwinism wants in order to prove it? I call that an inconsistency, which Darwinism can only reconcile, because in itself a conglomeration of inconsistent principles.

But I go on. If Darwinism be true, there must be "an enormous number of intermediate forms." And, of course, so there are; precisely what Darwinism would lead us to expect. But at the same time the geological record does not prove the continuity or universality of these gradations; but what of that? the theory does not want them. On the contrary, "We may safely assert [Mr. Warington says] that the geological formations now being produced could only most exceptionally give any indication of the truth of Mr. Darwin's hypothesis, supposing that hypothesis to be true." So, it seems that Mr. Baden Powell's, Mr. Darwin's and Sir C. Lyell's laments over "the imperfection of the geological record" are all a mistake; according to Mr. Warington, the theory can dispense with such evidence. It is equally to be regarded as true, whether we find that intermediate forms existed or not. Then Mr. Warington pertinently asks, "What geological evidence *would* satisfy an anti-Darwinian?" And I venture as frankly to say, *not any evidence of this kind whatever*. No want of it, as we have seen, disturbs Mr. Warington's faith in the theory. No amount of it could, we may be sure, ever convince any one whose objections to Darwinism are worthy of consideration. As regards geological evidence—or the *want of it*—"the foregone conclusion (I fear) would colour everything"!

It is in this part of Mr. Warington's argument that we come to a tell-tale expression, which I do regret to discover. In his view, the peculiar variations to be found in the different genera of the *Connaraceæ* do not present to his mind such a "symmetry

and manifest method" as to be "suggestive of especial design and [what he calls] arbitrary plan." *Design* has usually been regarded as proving the overruling of Divine intelligence and wisdom in nature. According to Mr. Warington, it merely means *arbitrariness*. Even Büchner has a better idea of what he, as an avowed atheist, openly opposes. He says, "Design in nature has ever been, and is still, one of the chief arguments in favour of the theory which ascribes the origin and preservation of the world to a ruling and *organizing* creative power." (p. 89.) You must pardon me going on, and quoting some passages that will grate upon your ears :—

> Is it not more natural [he asks] to consider certain phenomena as the effect of changes in the temperature, than to imagine a heavenly tailor who takes care of the summer and winter wardrobes of the various animals? The stag was not endowed with long legs to enable him to run fast, but he runs fast because his legs are long. He might have become a very courageous animal, instead of a timid one, had his legs been unfit for running. The mole has short spatulated feet for digging; had they been different, it would have never occurred to him to dig. Things are just as they are, and we should not have found them less full of design, had they been different. (p. 91.)

He then quotes Mr. Darwin, and especially refers to his view of the development of the eye, so admirably handled in our Vice-President's *Inaugural Address* last year; and then adds—reminding us how very old this pretentious Darwinism is :—

> Empedocles, the Greek philosopher, already taught that, when matter assumed shape, there were many irregular forms which could only partly sustain themselves, and which only slowly attained forms adapted to certain ends. (p. 92.)

According to Büchner, nature is "guilty of many purposeless absurdities" (p. 94); and he says that comparative anatomy "makes us acquainted with a number of physical characters which are perfectly useless to the animal possessing them, and which appear merely as the rudiments of an organ which in another species is more developed, and consequently useful to the animal." (p. 97.) Again: "Contrivances apparently purposeless are numerous in the structure of animals and plants." (*Ib.*)

And yet, in some of his statements, he is more moderate than Mr. Warington. For instance, Mr. Warington considers it indisputable that "*all* living beings reproduce themselves in a geometrical ratio of increase, which must inevitably lead to an overcrowding, a jostling, a struggle, both for position

and subsistence." Büchner more cautiously says:—"The fruitfulness of *many* animals is so great that, abandoned to themselves, they would in a few years fill up the seas and cover the earth." (p. 98.) Before I pass on I must also notice that, according to Büchner, one of the most important facts against the theory that "nature acts with conscious design, is the production of monstrosities." (p. 98.)

We hear a good deal of persons "not understanding Darwinism." How admirably, on the other hand, do the Darwinians appear to understand what they oppose. According to Mr. Warington, "especial design" means "arbitrary plan;" according to Büchner, "our argument from design" must imply that "nature acts with *conscious* design," as if "nature" were our Deity!

Before I proceed to consider what Mr. Warington calls the *adequacy* of Darwinism, I must notice the paradoxical consistency of the very name of the theory. Not long ago in this Institute, when discussing the subject of *Miracles*, we had a definition of nature put forward (and I think at least tacitly accepted by Mr. Warington in his argument), namely, that the word has only a meaning with reference to a settled course or order, or law, implying a lawgiver; and then "the uniformity of nature" was constantly in Mr. Warington's mouth. Well, I think we would all admit—unless we had a foregone conclusion to colour our judgment—that the word *selection* implies choice and an intelligent selecter. But Mr. Darwin's theory is well named "the law of natural selection"—natural being used in antithesis to what is according to law or to uniformity, and selection as opposed to either choice or design. The whole thing means only "law" *per accidens*—that is, lawlessness; and, instead of "natural selection," we really know it is a theoretical process of *accidental existence and extinction;* a jostling scramble and struggle for life; a *sauve qui peut* in creation; with Providence, when not consistently set aside, exercising only the prerogative of the heathen fate, and ruling mercilessly *Væ victis!*

But still we are gravely asked, "Are the causes alleged *sufficient* to account for all the specific differences known to exist?" We are very fairly told in advance, that it is very far from satisfying the hypothesis merely to admit that *some* races may have originated as Mr. Darwin thinks; the proposition being "that *all* have." But here Mr. Warington has betrayed himself, and his frank mode of putting it is apt to betray us into a false and illogical position. Consistently inconsistent once more, the reasoning plays with words, like the demented Prince of Denmark:—"all" does not here mean all;

it means only "all *but one*," or as Mr. Warington himself prefers—less consistent than even the distracted Hamlet!—*all* means all living beings, *excepting some eight or ten* progenitors; and thus going *per saltum*, and I fear unphilosophically as well as illogically, from the very condition precedent he had laid down,—namely, *all* or nothing,—he proceeds to his second inquiry as to "adequacy." In fact, you will find that now the theory does not "run on all fours" to any purpose, or even with itself. It really does not account for the *origin* of species at all! It asks you first to give it four or five progenitors for animals and four or five for plants, and then it can go ahead. The theory is "possible," in Mr. Warington's opinion, if you will merely grant that "species vary," and that their variations "*frequently* have a bearing on their adaptation to the circumstances of their life," &c. To which I reply, this is excellent reasoning to account for *new* varieties, or let me again concede for perhaps *new* species; but how does it account for the *origin* of species? It might account for "*some* races," and "some specific differences"; but that "is very far from satisfying the hypothesis, which is not that *some* races have thus originated, but that *all* have."

This is Mr. Warington's own refutation of his own argument. But this argument had been preceded by other *obiter dicta* equally self-contradictory. For instance, this:—"There is a perpetual struggle for existence going on, both among rival races and rival individuals; and this struggle must lead to *selection*." But then this so-called selection merely follows the struggle among the rival races and rival individuals that are presupposed to exist. It does not account for their origin. And *before* we get into this crowd of races and rivals, even an "unprotected female" might have been safe, and not forced to make struggles for life! Surely the four or five progenitors at most of plants and of animals would not, on the face of this wide, wide world, have felt themselves subject to overcrowding and jostling and struggling, either for position or subsistence!

But Mr. Warington, who has made up his mind to the long geological periods, though he objects—I think very properly—to the geologists' special and detached creations, quite omitted to tell us whether the four or five plants of Mr. Darwin's theory were specially first created, and if so, how long it was after them that the four or five animals were next also specially created; or if they were all specially created together? And this is no idle question, intended merely to puzzle a Darwinian to say what he really finds intelligible in the hypothesis he submits to us as credible. For, let me ask this further ques-

tion, with reference to the fertilization of orchids, How could they possibly have been fertilized and continued in being—supposing we pass over the difficulty of their first coming into existence—without the co-existence of the insects required for their propagation, according to Mr. Darwin's interesting volume on the subject? I may remind Mr. Warington that there is, if I may use the term, a theory of creation—not that of special creations invented by geologists with long gaps between—but an account of continuous creation, in which the insects that fulfil this purpose of nature come quickly into being by the Creator's word, very shortly after the orchids themselves, with all the original flora of the earth, burst forth into existence in all their marvellously varied beauties and blossoms.

And here I must observe, with some satisfaction, that throughout Mr. Warington's paper, he never ventures to propound a difficulty as regards that view, or to draw a contrast between Darwinism and that Divine theory of continuous special creations completed within six days; for he only contrasts the humanly invented theory of special creations by fits and starts, with ages intervening, and the gradual development theory of Mr. Darwin, which he prefers.

And now, Sir, I think I might claim to have met fairly all Mr. Warington's leading arguments, and proved Darwinism to be inharmonious, inconsistent, inadequate, and therefore irrational and incredible. But I am content to meet it on still lower ground; not to press principles too logically against it; to allow it its illogical beginnings, and to leave the highest ground, in order, as it has been characterized, "to fight the battle in a bog," where the struggle for existence is already imagined to be going on; to grant so far, as Mr. Warington asks us, the "possibility" of the theory, and test its adequacy upon points of detail.

And here I must quote for distinctness what our author calls the elements of the theory:—"1. Growth with reproduction; 2. Inheritance which [I agree with him] is almost implied in reproduction." And these two definitions, in my opinion, might fairly be merged into one we have all often heard, that "like produces like," which is implied by either "reproduction" or "inheritance." Then we come to No. 3, which is, "Variability, from the indirect and direct action of the external conditions of life and from use and disuse; and 4th, a ratio of increase so high as to lead to a struggle for life." Now No. 3, you will observe, is in antithesis to Nos. 1 and 2. *Variability*, and not reproduction or inheritance, is what it predicates: in other words, it requires us to hold that "like does *not* produce like" in nature. It is here we have *the* essential

element of Darwinism. The whole question is,—How far this is true? Is *like producing like* the rule in nature? or, Is variation the rule, and reproduction and inheritance exceptions? This is the grand issue we have to settle. Now I have said that Darwinism converts the exceptions into the rule; and so does Mr. Warington in the conclusion he draws from these conflicting "elements of the theory." He says,—"The result is natural selection, *entailing divergence* of character and the extinction of less improved forms,"—in other words, the result is (1) *Dissimilarity*; and (2), in so far as there is *not* dissimilarity, *destruction*, or, euphemistically, "*the extinction of less improved* forms."

I must here observe, that the effect of "use and disuse," which is really the leading principle of the theory of Lamarck, is stuck into Mr. Warington's third definition, (following, however, in this his master,) because Mr. Darwin's own peculiar theory of "the struggle for existence" is itself felt to be inadequate. Here is another and fuller account of Mr. Darwin's reasoning, which I put forward in a paper read before the Anthropological Society three years ago:—

As regards vegetable life, Mr. Darwin dwells almost exclusively upon his law of natural selection proper, to account for modifications. But, when he comes to speak of animals, he recognises that "the external conditions of life, as climate, food, &c., seem to have induced some slight modifications." He also says, that "*habit*, in producing constitutional differences, and *use* in strengthening, and *disuse* in weakening and diminishing organs, seem to have been more potent in their effects." When, however, neither *use* nor disuse appears to operate sufficiently to justify Lamarck's theory, then Mr. Darwin is ready to draw attention to "the most important consideration, that the chief part of the organisation of every being is simply due to *inheritance*;" and so he accounts [as any anti-Darwinian would do] for the webbed feet of the Upland goose "remaining unchanged;" and he curiously describes them as being "rudimentary in function, though not in structure!" (*Orig. of Species*, pp. 185, 204, 219.) In fact, Mr. Darwin confesses that he is "well aware that scarcely a single point is discussed in his volume on which facts cannot be adduced, often apparently leading to conclusions directly opposite to those at which he has arrived." (p. 2.) Yet he very ingeniously claims all these conflicting facts as illustrations of one or other of the various theories, old and new, which he has selected to form into one, of a very plastic character indeed, itself a practical specimen of "transmutation from varieties." *

Now it must be perfectly plain, I think, that I do not strain the Darwinian hypothesis unfairly, when I say it makes variation

* On Anthropological Desiderata.—*Anthrop. Rev.*, vol. ii. p. cxx.

and divergence the rule, and almost, if not altogether, sets aside what Mr. Warington calls its "two first elements," and I the canon that "like produces like." For, if not;—if that were the rule, then if we begin with one form only, only one form would have been reproduced; or, if we begin with a few forms, or with eight or ten, then only the few forms or the eight or ten, instead of myriads, would have been the result. If, on the other hand, it is attempted to turn this logic against the hypothesis that like producing like is the rule of nature, and variations are the exceptions; and if I am told that I cannot account for those myriad forms which do vary before our very eyes, as I frankly admit they do,—I beg leave to reply, *non constat.* The theory of Creation I contend for, assumes that by the fiat of an all-wise and omnipotent Creator, the earth, made up of varied elements, brought forth a varied flora of several kinds to begin with; and afterwards that the waters and the earth likewise brought forth every living creature after its kind. It begins with varied genera and species, which are to increase and multiply in the earth and waters; *like producing like, "after their kind," and variations producing new varieties.*

At the first, in any one genus or species, it does not begin with *one* merely, according to *our* hypothesis, but always with two at least—"male and female created He them,"—and these pairs are never precisely alike. Hence the consistent origin of fresh varieties upon this hypothesis,—it may even be of *new* species. What is common and like in the two parents or progenitors, we may believe to be naturally inherited and reproduced; wherein they differ or vary, the result will be a fresh difference or modified variation. If Mr. Waringtons woman with the web-foot had only had—like the Upland goose—a web-footed mate, this *lusus naturæ* might probably have been perpetuated, instead of fading away as it did, "a mere transient sport," obliterated in a few generations.

Not to follow in detail the other instances he has given of abnormities and defects, transmitted exceptionally and afterwards extinguished, I come to his summary of what they teach us. He admits that in these instances the varieties were highly disadvantageous or of even an abortive character, and not *improvements* upon the ordinary forms of life. But what of that? You have only to suppose the contrary to the facts of the case, and all will go well with Darwinism. He says, "Suppose these variations *had* been beneficial!" I reply, *They were not.* But I must quote his *naïve* argument at length:—

Had the variations been beneficial, and so themselves have tended to

preservation—had, for example, the palmation of the toes occurred in a bird living partly in the water, or the baldness in another to whom head-feathers were inconvenient (and the like phenomenon has been observed to be hereditary in doves); or, again, had similar changes taken place, only in an opposite direction—say the strengthening of the lungs instead of their weakening, or the addition of pigment to eyes formerly devoid of it, instead of its withdrawal from eyes formerly possessed of it; had, especially, owing to the favourable influence of such variations, and the consequent multiplication of their possession, some of the successive generations been born of parents both of whom varied in the same manner;—*had* this *been so*, we cannot doubt but that races of living beings would have come into existence differing most markedly in structure from their progenitors, and forming species which the anti-Darwinian naturalist would ridicule the idea of ever having sprung from the source they did.

Of course, if Mr. Warington may be allowed to vary the facts of nature as he pleases, and also to select them, as well as to vary his arguments irrespective of his own premises and logic, there can be no doubt he may establish Darwinism or any other fanciful hypothesis.

But now I must pass rapidly on, and notice a few points only, to show that I have not overlooked them, though I cannot now possibly notice all. As to "use and disuse," the Upland goose alone refutes Mr. Darwin and Lamarck. As to Mr. Warington's difficulty with respect to Pliny's evergreen plane-tree, it is explained, I think, in a word:—"The earth brings forth," as God commanded; and if the appropriate soil is wanting for what has been once produced, no doubt a species or variety of plant may die out or be greatly modified. This also, I think, affords the simple explanation why a heavier crop of hay is obtained from mixed seed than from seed of a single kind; and it teaches why the rotation of crops in farming is beneficial. It also refutes the endless prolificacy theory of individual forms. They would soon exhaust the soil that suits them, and then die.

As regards all Mr. Warington's instances of sailors' long sight and students' short sight, of right-hand use and long-legged runners, down even to the aldermanic development of the stomach, he surely knows that no long-sight or short-sight race has been thus produced; that throughout the world all races are generally right-handed; and I don't believe he can prove that all the swiftest runners have the longest legs; while it is notorious that all the feasts of the Corporation of London have not served to produce such a pot-bellied race as the miserable, half-starved Bushmen in South Africa!

I grant, freely, that there are variations of the *kind* Mr. Darwin appeals to. I deny that such variations are either in

the direction or to the extent he wishes us to believe, contrary to every instance he himself has adduced. His analogy of *artificial* selection by man in the breeding of pigeons, &c., is only another of his illogical efforts that even his own facts refute. For we know that all artificial breeds of pigeons or rabbits become very soon extinguished by reversion to their common type, when left to themselves and to *nature*.

Mr. Warington tries to obliterate the peculiarities we know as regards species, although in another place he admits specific differences at the present time to be constant and inherent. And as regards his belief in new species being developed progressively and upwards from lower to higher forms; because, perhaps, the lower forms, like those that now occupy the bottom of the ocean, are generally found embedded in strata below fishes that swim, and animals that live on the land;—I must quote from Professor Huxley's address to the Geological Society in 1862:—

> Obviously [he says,] if the earliest fossiliferous rocks now known are coeval with the commencement of life, and if their contents give us any just conception of the nature and extent of the earliest fauna and flora, the insignificant amount of modification which can be demonstrated to have taken place in any group of animals or plants is quite incompatible with the hypothesis that all living forms are the results of a necessary process of progressive development, entirely comprised within the time represented by the fossiliferous rocks.

This, of course, I use only as an *argumentum ad hominem*. I have already said that no dead remains of formerly existing gradations in the fauna or flora of the world could prove that they developed upwards and out of one another, though I admit variation within nature's known limits. Here, again, however, Darwinism requires us to reverse the facts of nature. The author of the *Vestiges* thought that no fish existed at the period of the lower Silurian deposits, but only crustacea and molluscs. But remains of fish have since been found even below that formation, and not merely of fish of a low kind, but in the highest state of organization.

If we think, with Hugh Miller, that "There was a time when the ichthyic form constituted the highest form of life," still the sea during that period did not swarm with fish of the degraded type. At the time also when (he concludes) all the carnivora and herbivorous quadrupeds were represented by reptiles; still there are no such magnificent reptiles now, as then reigned on the earth. If again (like Miller) we think there was a time when birds alone represented all the warm-blooded animals of the globe; yet we find from the prints of

their feet left in sandstone, that the tallest man might have walked underneath their huge legs. So again, when we come to the higher strata in which quadrupedal mammals became imbedded by some convulsion of nature, what was their earliest character? We find the sagacious elephant, now extinct save in Africa and Asia,—and there restricted to two existing species,—we find it almost over all the old world, and a closely allied genus occupying its place in the new. "Most certainly all the geological facts (says Hugh Miller) are hostile to the Lamarckian conclusion,"—which Mr. Darwin has only rechauffëed and served up with some ingenious trimmings. "As if (continues the author of *The Testimony of the Rocks*) with the express intention of preventing so gross a mis-reading of the record, we find in at least two classes of animals—the fishes and reptiles—the higher races placed at the beginning." To quote, with some modifications, from another writer:—Thus it is too with birds and quadrupeds. Where deepest down in the earth's strata their remains appear, they show no evidence of just emerging from a lower order. They stand forth in full development, and usually of giant size, compared with such of the same orders as occupy a super-position. Indeed, the evidence of geology most naturally tends to the conclusion, that each of the successive races of creatures, found imbedded in the earth, was created in its highest state of perfection; and that the varieties of the same orders afterwards found, testify rather to a process of degradation than to a process of development towards a higher class.*

Finally—as regards the phenomena of embryology, and the marked similarity in all organic development, and the existence of what are called "rudimentary organs," occasionally not developed,—they appear to me only to teach that all organic growth proceeds upon common vital principles and laws, which, the true theory of creation enables us to understand, must have been ordained by infinite Wisdom and with beneficent Design. To establish this, however, is not my present task; which has been only to endeavour to prove that Mr. Darwin's theory, as advocated by Mr. Warington, is utterly *incredible*.

Captain Fishbourne.—I rise to speak on this subject, in order to look at it from a common-sense point of view, and to express my protest against Darwinism. Mr. Darwin and Mr. Warington have founded many of their arguments upon the effects of man's interference with nature, as for instance in the case of domestic animals. The alterations, brought about by man's

* Vide *Creation's Testimony to its God*, 10th ed., p. 133.

intelligence, we must admit; but these gentlemen seem to overlook that even the differences referred to are very limited, and that man's utmost skill fails to enlarge them beyond these limits. Moreover, the moment man's influence is withdrawn, the animals return to their original condition, clearly showing that the alterations thus effected were abnormal. That this is the case with pigeons is admitted both by Mr. Darwin and Mr. Warington, and several instances are given in illustration of the fact; and yet, on the other hand, they argue as if the changes made had become inherent and constant. We know that this not so; but, granting that the changes have become inherent, we are then involved in this difficulty, that there is not a "progress to perfection" according to the Darwinian theory, but a stopping short in these varieties which we are told are fixed. In either case, then, a violation of the theory. Mr. Warington states that these changes are brought about by "the law of natural selection," but of this there is no explanation—

Mr. WARINGTON.—If you read the paper you will find there is.

Captain FISHBOURNE.—I am aware of what is stated; but I say there is nothing intelligible in what is called "natural selection." Are we to understand that the flower, that requires a *particular* fertilizing pollen to produce a given change, *selects* both the insect that is to carry the pollen as well as the particular pollen that is to be carried to it? Or are we to suppose that the insect is the selector? If neither is, then there is no selection. If the insect is, then it is required to exercise a degree of intelligence far transcending anything that can be conceived of in man. The fact is, there is no such thing in nature as this natural selection: it is contrary to common sense to suppose anything of the kind. As to the most difficult part of the theory, that of transmutation, we are left without even a hint of the process, and are given, instead, a lame attempt at the description of the formation of an eye. Mr. Darwin says:—

"It is scarcely possible to avoid comparing the eye to a telescope. We know that this instrument has been perfected by long-continued efforts of the highest human intellects, and we naturally infer that the eye has been formed by an analogous process. But may not this inference be presumptuous? Have we any right to assume that the Creator works by intellectual powers like those of man? If we must compare the eye to an optical instrument, we ought in imagination to take a thick layer of transparent tissue with spaces filled with fluid, and a nerve sensitive to light beneath, and suppose every part of the layer to be continually changing slowly in density, so as to separate into layers of different densities and thicknesses, placed at different distances from each other, and with the surfaces of each layer slowly changing in form. Further we must suppose that there is a power (*natural selection*) always intently watching each slight *accidental* alteration in the transparent layers, and carefully selecting each alteration, which under varied circumstances may in any way or in any degreee tend to produce a distincter image. We must suppose each new state of the instrument to be multiplied by the million, and each to be preserved till a better be produced, and then the old ones to be destroyed." (p. 219, 4th edition.)

This is the idea given of an eye forming itself. But what determines the kind of eye that is to be formed—whether it is to be the eye of a cabbage or that of a man; for by the theory they are equally derivable from the "one

primordial monad"? Reference has been made to sailors' long sight. Now it is notorious amongst us sailors, that sight to a great extent depends more upon the mind than upon the eye. If a lad at sea says he cannot see what others see, he is told he must be made to see, and he is punished for not seeing; and we find that he very soon learns to see. But can any intelligent person suppose the eye has been improved so as to produce this effect? Certainly not. It is well understood that it is the mind that has been exercised, and its perceptive faculties have been developed, while the eye has been unchanged. But the Darwinian theory supposes this power is in the eye. Are we then to consider that there is no mind; or that matter is all mind, or mind all matter? It really involves this:—If there is such intelligence exercised by material tissue, then is matter all mind! A living philosopher tells us that there is no matter, and that matter is only a condition of mind. This controversy ought to be settled, before we are asked to believe in such a theory as this.

Rev. J. MANNERS.—I have not had the pleasure of reading Mr. Warington's paper, but have been much interested with that we have heard this evening by our Hon. Sec., Mr. Reddie. This subject, I must say, appears to me a very curious one. I recollect reading some time ago some verses in *Blackwood's Magazine* (for May, 1861) *apropos* to this; and though I do not quote them as an argument, they are much to the point. They begin:—

"Have you heard this strange theory the doctors among,
That all living things from a monad have sprung?
This thing hath been said, and now shall be sung;
Which nobody can deny."

Then they go on to account for the formation of elephants, giraffes, &c. thus:—

"A very tall pig with a very long nose
Sent down a proboscis quite down to his toes,
And then by the name of elephant goes;
Which nobody can deny.

"A deer with a neck which was longer by half
Than most of its family (please not to laugh),
By stretching and stretching became a giraffe;
Which nobody can deny.

"Pouters, tumblers, and fantails are from the same source;
The racer and hack may be traced to one horse:
So men were developed from monkeys, of course;
Which nobody can deny.

"An ape with a pliable thumb and big brain,
When the gift of the gab he had managed to gain,
As a lord of creation establish'd his reign;
Which nobody can deny."

Afterwards the author goes on to show how—

"Fleas, flies, and lobsters in order succeed,
And icthyosauruses follow the lead."

And I think, without the writer of these verses going into any deeper philosophy about the matter, there's a good deal of fitness in what he says in reference to "this strange theory the doctors among"—this Darwinism. But, to come to the subject in a somewhat graver manner, it is deeply important that we should consider the subject well; because if for a moment I can imagine that man is merely an advance on a first-rate monkey—that I am to consider my origin no higher than a respectable ape, who sprang from a funnyish monad, myriads of myriads of ages ago—the probability is, if I don't take care, I may return to that condition, whatever it may be. (Laughter.) If we move in cycles of this kind, who can say this will not be the case; for nothing rises higher than its proper source? I am sure that no one here who would admit a theory like this—would doubt for an instant that it is possible, yea, probable, that we should come back to such—

The CHAIRMAN.—I rather think that you are in perfect accordance with Darwin, because he tells you that, do what you will with the pigeon, it will go back to the original type; and therefore there is that probability as regards man. It is quite in accordance with the theory.

Rev. J. MANNERS.—Now, as to the truth about man. What is the true living, real, divine philosophy concerning man's nature and origin? I am fully convinced this is truly found as recorded in Genesis; and so the theory of Darwin may readily be cut up and shown to be absurd in the highest degree. Let us for a moment or two glance at the account there given:—1st. We have in the beginning that God created the heavens and the earth—that darkness was on the face of the deep—that God said, Let there be light,—then comes a separation between the light and the darkness—and, let the waters be gathered together into one place, and let the dry land appear. We have the manifestation of the sun, moon, and stars, which are for signs, seasons, days, years, to divide between the day and night. We read—Let the waters bring forth abundantly the living thing after its kind—let fowl fly in the midst of the heaven of firmament—let the earth bring forth grass, and the living creature after his kind, &c.—and it *was* so—it *is* so, according to this divine fiat. Hence we see that the inferior orders of the creation are living, moving, and acting according to their peculiar nature and in obedience to the law contained in this *fiat*, or "*Let be;*" therefore we see this order of the creation rising no higher than the properties it received in its origin, in harmony with the divine will and purpose, and therefore we reasonably infer its probability. We must admit this, because we see how all things harmonize therewith. Let the earth, the waters, the sun and moon, do or act so and so; and we see the manifestation of wisdom herein—that *all* do act in perfect and simple obedience to it, and exhibit the various powers, faculties, virtues, and properties of their "nature"—a nature which is very little understood, but which, when deeply investigated, will be found to subsist and operate in beautiful concord with *the Will* of the Creator. We now come to the creation of Adam. We do not find it stated, Let the earth bring forth men and women; or, let it produce apes and monkeys, and terminate in man. No; here is the grand distinction.

God said,—Let us make *Adam* (I prefer using that word) in our image and after our likeness; and let them have dominion over all things, the fish of the sea, the fowl of the air, and over everything upon the earth. So God created Adam in His own image; in the likeness of God created He him—male and female created He them;—and observe, He called *their* name Adam (Gen. v.), in the day they were created. In this there is doubtless a glorious truth hidden: before the separation of *Eve*—before the deep sleep upon Adam—He called their name Adam, and blessed them; and all was very good. Now, there can be no doubt that Adam, or man, heads-up the entire creation; that every element of the universe is in him—fire, light, magnetism, darkness, &c.; in fact, all the elements of the visible; and for this plain reason, that he was to rule over all. We observe, too, that he is an out-birth of the *Eternal:* for God *breathed* into him of His own eternal being. He did not breathe the breath of life into animals and vegetables, but He did into our ancestor; and hence the reason why man can never rest or be satisfied until he find his rest in the *Word* and Spirit and bosom of God. We notice, too, this fact, that *man* is fallen from his high estate; so also is the world. Man, we say, is fallen from his paradisiacal state into this elementary world, which now brings forth its thorns, briars, and thistles. Our roses have thorns—the elements their storms, tempests, and discords; the one *pure* element is divided into four; and we witness great and seeming contrarieties and confusions. All this is very different to its primal state, when all was very good. This will solve many difficulties. (Hear, hear.) The results of the fall are everywhere apparent—specially we feel this in ourselves. Can any one say it is not so? Does not the whole creation give utterance to this truth—that it is in bondage—that it is waiting to be delivered from its bondage of corruption, and to be brought into a liberty which it once enjoyed? The Scriptures tell us it shall be accomplished; that the creation was made subject to vanity not willingly (Rom. viii.), and this for a period, and that it shall be raised into the glorious liberty of the children of God. I wish for a few minutes, however, to refer to *our own gradual* development from one state to another; from one of low to one of high degree; from an earthly to a heavenly. Whence these aspirations? I see two men very different in their motives, actions, and desires; one acting according to pride, ambition, covetousness, envy, and the like, selfish in the extreme, whose views seem to be bounded by time's limited horizon; and I see another, whose every desire and motive is to reach and realize eternal things, passing by the temporal, almost, to enter into the everlasting; whose being and walk seem wholly centred in communion and fellowship with God; who knows that he is a *changed* man: yea, that he has emerged from darkness and chaos of mind into light, from a state of separation from God into union and fellowship with Him; that, being once darkness, he now feels himself to be light in the Lord. How comes all this about?—whence this change—this, what shall we say—this transmutation? His *will*, reason, affections, imagination, are apparently altered. How is this? Now he has found peace and satisfaction; the mystery is being solved; he has found the secret.

The *first* fallen Adam has found the second or last Adam—the earthly has come in contact with the heavenly ; the *living* fallen soul has been quickened and raised unto eternal life by Him who is the quickening spirit—the Son of Man—the Lord from heaven. The power or spirit which brooded over the face of the deep, when darkness rested upon it, has brooded over the deep and darkness of his being ; and the Word has spoken, mysteriously indeed, light into his being, and brought all the latent powers or possibilities of his nature into beauty and harmony, to make all subservient to the design of Him who formed him in His image and for His glory. The notion that a few *simple* monads were first created somehow or other, and that through their working through innumerable ages, by *natural* selection, we thus are made to witness the various and indefinitely multiplied forms of life ; and to be asked to consider this a proof of infinite wisdom and power—rather than the simple divine philosophic and theosophic statements we read in Genesis—is simply absurd. Why should men of science seemingly ignore the beautiful and plain declarations of Scripture in reference to the creation of the universe and of man, in order to bring in vain theories and speculations to attempt its solution ? The whole creation speaks of the *living* Presence of the Living Great First Cause ; and although there are many things which appear contradictory and wrong, yet, rightly understood, we know these are necessary to work out the grand design and show forth the majesty of God. (Hear, hear.) I see this, I feel this. The Book of God I know is in harmony with the Book of Nature ; and when these volumes are thoroughly understood by the truly enlightened mind, he sees a glorious unity in the diversity and sounds in Nature, which were thought to be discordant with the sounds and expressions in the Scripture, but are now felt to increase the harmony and melodize the whole. All is of *One :* God is God ; and His tender mercies are over all His works, which are great, and sought out by all them who have pleasure therein.

Rev. R. Thornton, D.D.—We must thank Mr. Warington for bringing forward the very interesting subject before us. An accusation some have brought against this Institute is, that we come to our work with foregone conclusions, and do not care for facts. I think our free discussion on the present subject will clear us in some measure from these imputations. Of course we do, in one way, come to our work with a foregone conclusion, because we believe in the truth and inspiration of Scripture ; and we have an avowed object, which is, to examine scientific statements supposed to be inconsistent with Scriptural truths, in order to show that such inconsistency is not real, and disappears when the scientific statements are put into a correct form. For this purpose we stand in need of facts, and are greedy of them ; but we do not want what is often palmed off on us for facts, the crude generalizations and hasty conclusions of sceptical sciolists. Though I am glad that Mr. Warington has introduced this subject, I shall have to trouble you with some remarks which make against him. Still, as a well-known journal has termed him our "*advocatus diaboli*," I am sure he will not mind the opposition which that *advocatus* must always be prepared

for. (Laughter.) First, let me express my acquiescence in his feeling, that Scripture must not be imported too readily into scientific discussions, but that the two should be considered, as far as may be, separately. I must, however, qualify his words, by excepting those cases where (as with many subjects we discuss) the question turns upon the real force of a Scriptural statement. Here we may see at once that Scripture has to be imported. It would not be unfair (for example), if we were to argue that of two otherwise probable theories, one contradicting, the other agreeing with Scripture, the members of this Institute would naturally adopt the latter. Again, I must thank Mr. Warington for what he has said about geology. I am glad to find Darwinists ready to give up geological arguments. We have had too much of this science; its votaries are far too proud of it. They seem to imagine that a shell or a bone found in an odd place is quite enough to prove Scripture valueless. Mr. Warington gives the right answer to such fancies, by pointing out that our geological knowledge is yet very imperfect; and that arguments drawn from it cannot be alleged either against Darwinism or against Scripture. Let us give them their proper place; but no more.—I am dissatisfied with the title of Mr. Darwin's book, "The origin of species, by the process of natural selection and *struggle for existence*." What is this struggle? Is there any? (Hear, hear.) Who are struggling? Granted that under certain circumstances the natural powers of reproduction cause a large number of individuals to come into existence; so large that there is not a sufficient pabulum for them, and that some give way, and are utilized in a different manner from others,—is that a struggle for existence? Far from it. They have it; they do not struggle for it, but under certain circumstances cannot maintain it: surely this ought not to be called "a struggle," as if species were imbued with a sort of Ishmaelism,—the hand of each against every other! Another term to which I take exception is, "the origin" of species. Mr. Darwin endeavours to show that species originated in a certain manner, by arguments which really prove that there are no species at all. (Hear, hear.) Mr. Warington himself, arguing as an able Darwinian, says we must not import into the discussion any definition made by prejudice. But he lays down a definition himself, and says we must not assume certain other things, which would be begging the question: "A species is a race of living beings possessing common characteristic differences from all others, which differences at the present time are constant and inherent." This is not adequate. In logical language, we miss the "differentia" expressing the power of reproducing a fertile progeny. To omit such a portion of a scientific definition is really to beg the question, because its omission implies its non-existence; and so the definition from which it is absent is itself a prejudiced definition. And so we find ourselves at issue not about the origin of species, but whether there are any species at all. This further appears from the expressions used with regard to the primeval progenitors of plants and animals. "There may be four or five," "there may have been only one." But these two cases are widely different. If there were five progenitors, then there are species, or may be: if one only, then they disappear. I cannot help thinking that a point has

been here tacitly assumed which ought to be demonstrated ; namely, that there is no species distinguished from another species by the differentia of consistent reproduction, varying only within a fixed limit. Now this I contend Mr. Darwin and Mr. Warington have not proved, and never will.

Dr. J. H. GLADSTONE.—While sitting at the other end of the room I have been thinking of two functions of this Society—two functions it is supposed to discharge—namely, the slaying of giants and the laying of ghosts. By the first I mean, that from the border-land of knowledge and no knowledge, huge theories and hypotheses stalk forth, which frighten many mortals ; and we are disposed to go and fight them. Then sometimes we hear that from a suspicious quarter there has risen something very "uncanny ;" and our wisdom in such a case is to take a candle and walk up and try to put the candle through the ghost's body, when we generally find the ghost to be something very innocent after all. If we run away from the ghost, the ghost will haunt us, and we deserve it. Now, there is this huge, gigantic and majestic hypothesis of Darwin, and several attempts have been made to slay this giant. Mr. Mitchell tried it in his first Address ; then we have had various questions asked by Mr. Reddie on former occasions, and again to-night ; and since then it has been defended ; and I think now the battle may go on for some time. Then there are various ghost notions about it : some say it is rather infidel ; and there are other ideas about it ; but let us look these suspicions in the face. As to the question itself, it is not to be expected, in a short speech at this late hour, that I can go into it in half its details ; but I have little doubt that if Mr. Darwin had put forth his work as " The Origin of Varieties," and had insisted that they arose from natural selection, it would have been accepted as an explanation of the origin of varieties by nearly all naturalists, and I do not suppose the question would have come before us here. (Hear, hear.) It appears to me so evidently true that there is this struggle for existence, that there are these modifications taking place from generation to generation, and so true that any modification which is more adapted to the circumstances in which an animal lives must give it a better chance of propagation, that I think there would be no hesitation in accepting natural selection as a *vera causa*. The difficulty springs up when Darwin extends this, and endeavours to push the theory beyond these limits (hear, hear); and then comes the question, whether species exist in nature originally, or are varieties carried to such an extent that they become permanent ? That is the question,—a serious one, and difficult to answer. On the one hand, do we find any of these limits of which Captain Fishbourne has spoken ? I do not think we can fix the limits of the power of artificial or natural selection ; and, on the other hand, we do find something like the actual existence of species in nature ;—that is to say, there are allied creatures which are so far apart that they cannot be brought together to reproduce any intermediate creature, or if they have any progeny it is not fertile. But then, again, as to this question of hybridity, we want to be certain about that ; and I think, as experiments can be easily carried on with reference to plants, it will be a fruitful source of inquiry to find the real phenomena. The whole question turns on this, whether

species have a real existence or not in nature ; and it appears to me that our idea of the credibility or incredibility of the hypothesis must almost depend on that. There are various arguments which have been urged against Darwin's views; and it is difficult to conceive how an eye could be produced by a sensitive nerve : but I need not repeat them. I have no doubt Mr. Warington can remove a great many of these difficulties, and I do not think he will have much difficulty in answering much that has been said against him this evening. But allow me to produce one argument which appears to me (I do not know why) not to have had the attention given to it which it deserves. It is this. The Darwinian hypothesis absolutely insists on this, that every modification of an animal or plant must, in order to become permanent, be an improvement, and fit it more for the condition in which it is. Hence, to take Mr. Manners's poetic illustrations, we can understand, on the Darwinian hypothesis, the elongation of the nose of the elephant ; because every elongation of its nose made it better adapted for getting plants. We can understand perfectly well the stag lengthening its neck, so as to become a giraffe ; because the longer the neck the more suitable for getting branches from trees. But then there are various organs which are of no use whatever till they are of a certain development, and there there appears to me to be a great difficulty. I will instance the wing. Until the wing is sufficiently large or strongly developed to be able to lift the creature from the ground and to carry it through the air, it is of no use whatever ; the half-developed wing would be only an impediment. If we go into the history of birds or winged creatures, we of course find that they are made upon the general plan of the vertebrata. We cannot say confidently whether the bird or the mammal came first ; but we know that before birds were on the earth, there were huge quadrupeds of the Saurian order, and abundance of fishes. Now what gave rise to these birds ? Did they come from fishes or quadrupeds ? In any case, it is difficult to imagine that the conversion of the front fins of the fish, or of the fore-legs of the quadruped into wings, would not be inconvenient for the animal ; and that each step would not be a great difficulty in their way ; therefore, the creatures modified in that manner would soon perish, and the birds never be produced. To take a more specific case, that of the bat. We know that the bat differs in ever so little a degree from the mouse,—in scarcely anything except the length of the fore-limbs, and the membrane by which it flies. Now, it is inconceivable that the bat could be produced from anything but a small mammal like a mouse. And, if we imagine the lengthening of the front legs and the formation of the web between the fingers, I think during that process we should get something neither fit for one thing nor another, which would hobble uncomfortably on its thumbs, as the bat now does when on the ground, but without the power of flying. I should like to know what can be said in reference to this. It appears to me a difficulty ; but one which may be only founded on my ignorance and want of imagination ; and perhaps other persons may be able to show clearly how this might have possibly taken place. As to the difficulties that arise from the theological point of

view, I must give my own experience. I read Mr. Darwin's book with much pleasure. I felt the weight of his arguments, and it never occurred to me that there was anything unchristian about it ; but afterwards there arose a ghost, and hearing of it, I took a candle, and it seemed to me the ghost was made of nothing. I could not find out that the first account of creation and the subsequent revelations tell anything as to the way in which God created different beings. The second account gives a specific and detailed history, as far at least as man is concerned. It is unnecessary for us to extend Darwin's hypothesis to man ; and we may accept some of Mr. Manners's remarks, and suppose that God acted in a different way in bringing man into the world. But suppose, with our inexorable logic, we were to consider man's body to have been produced in a similar way, we should find no difficulty in this respect with the first account of creation. With the second account, we have merely to consider that God, in revealing past history, adopted that poetic and figurative style which he always did adopt in revealing future history, and that the analogue of the second chapter of Genesis is not the book of Chronicles or the Acts of the Apostles, but rather the book of Daniel and the Apocalypse. Allow me to finish my remarks with a parable. I took a little child, who had been bred up in a city among houses, for a walk into the country ; and there stood before us a majestic oak. The child said to me, "Who made that tree?" I said, "God made the tree;" and in order to give the child, as I thought, some information as to natural objects, and also to raise his ideas of the wisdom and power of God, I explained how that tree was once a little acorn planted in the ground ; that it shot forth and developed leaves and stalks ; and the stalks rose higher and higher, sending out stems and branches, and in this way the whole tree was developed. During all this process, the materials for building the tree were brought to it ; the water in the earth dissolved salts and brought them to the roots of the tree, and so they were sucked up ; and the winds brought carbonic acid and water, and thus the tree grew. But the child turned away and said, "Oh ! I thought God had built up the whole tree at once ; and you say it is being gradually developed, and made out of some other things. I do not think much of God now"—

Mr. Reddie.—I think the child was so far right. The tree it saw was not *created ;* it grew.

Dr. Gladstone.—Well, the child got accustomed to the thought, that it might believe in the development of a tree from the seed without being atheistic ; and then, in another walk, I showed the child that the acorn planted was really the fruit of another tree, that had grown from another acorn, and so on ; and then the child, instead of having (as I thought it would) a higher appreciation of the wisdom of God, thought that I had further reduced the idea of God, because this acorn was made from another tree. But gradually it became accustomed to the idea of generation, and that that was not atheistic ; and then, in another walk, I began to explain that as this tree grew from an acorn, and the acorn came from another oak, and tree preceded tree, the trees were not always exactly alike, but that there were

modifications in them; and that if we went back many generations there were considerable modifications, till we must call the tree by another name than the oak, and that we might go still further and further back; and that is pure Darwinism. Then the child said again, in almost the same language as at first, "I thought God created every kind of tree at once, and now I find that there has been a gradual development: I do not think much of God." It appears to me that we are in the condition of this child; and I think we may believe in development, and believe in generation,—that we may believe indeed in this Darwinian hypothesis—without being considered atheists. We know the one, we are not sure of the other yet. I do not know what the fate of this theory may be; there is much to be said for and against it; but I have no doubt whatever, that if you speak of this theory as being sufficient of itself to account for all the varied phenomena of creation,—as capable of explaining the whole process,—Darwinism is incredible. But if we accept this theory of natural selection as only a small part of that process which it has pleased Almighty God to adopt in bringing about creation, I think it is neither incredible nor to be thrown lightly aside, nor to be considered an improper theory.

Mr. W. H. Ince.—I should not like the evening to close without dissenting from Darwinism, and letting it be known that I cannot believe that only eight or ten original species were created, and that all other species were produced from varieties. In the plan ordered to be followed by Noah in building his ark, it was to be 300 cubits long and three stories high, with lower, middle, and upper stories; that is, the ark was to be of an enormous size, and a great deal too large for eight or ten species only, if these were all that were required to reproduce all that now exist, as Darwin requires us to fancy or believe. We have never heard throughout the historical period of anything like the development of the elephant or the giraffe, or of any new species. And before we can believe anything of the kind we ought to be told where we may hear of or see some of these developments. With reference to what Dr. Gladstone represented to the child on first seeing an oak in the country, I would ask, Have we ever found the oak to have changed from the elm, or the sycamore, or hop, or from any other of the original trees or plants supposed to have been the first created on the earth? No. (Hear, hear.) For this, and for many other reasons, without occupying your time further, I should say the theory is perfectly incredible; and, at all events, I cannot believe it.

Rev. W. R. Cosens.—I have listened attentively to the discussion this evening, and arrived at conclusions, which I need not say I have considered before, and one of them I have always entertained. In the first place, I think that we may accept the Darwinian theory, if we put this title to the book of Mr. Darwin:—"The Theory of Deterioration of Species;" and if, *mutatis mutandis*, we take his book to show in what way the species of mankind may be reduced from high to low, then I think we should be well agreed; but when we come to consider the way in which the human species (to use his own term of speech) has deteriorated throughout, and the

cause of that deterioration, then I think we arrive at one great, if not the greatest answer, to the whole theory. I mean this : I pass from that one idea which has been prevalent in my mind, to another,—to the idea Mr. Manners struck the chord of, when he spoke of our ignoring any idea of there being a great Saviour-man come to recover man's lost estate. I consider this theory may be good to apply to vegetables and animals and fish, and all the various species with which this world is stocked. There may be causes in climates, in various temperatures, to bring about changes ; but when you come to man, you are applying it to a being to whom no law that *you* can in any way bring to bear ought to be applied. I mean this ; that the law of man's fall, the law of man's own self-will, what we Christians call free-will, has deteriorated mankind. Let us take the case of man coming from the ark, I mean Noah and his three sons. We have a distinct proof in my mind of the fact that there was a deterioration from that day forth on account of the sin of one man. They came out of the ark, and we find that the descendants of Ham have ever since gone back because of man's sin. It appears that that is ignored, excepting that Mr. Manners alluded to it once to-night. I think, therefore, that this theory is one which ought not to be applied to mankind or what may happen to man.

The CHAIRMAN.—As the time is so far advanced, I shall not call upon any other gentleman to speak ; and I think it is only fair—as Mr. Warington has been replied to in writing, and the discussion to-night has been so long,—that Mr. Warington should have the same opportunity of consulting Mr. Reddie's written Reply that he had of reading Mr. Warington's paper. This is also Mr. Reddie's own wish ; and I shall therefore, with your permission, adjourn the discussion to our next meeting.

The Meeting was then adjourned.