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ORDINARY MEETING, JANUARY 7, 1878.

THE REV. PREB. CURREY, D.D., MASTER OF THE CHARTERHOUSE, IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following elections were announced:—

MEMBERS:—The Right Hon. the Lord Nelson, Salisbury; J. R. Coutts, Esq., London; J. R. Fairfax, Esq., New South Wales; Rev. M. C. Osborn, London; Rev. W. B. Pope, D.D., President of the Wesleyan Conference, Didsbury.

ASSOCIATES:—Rev. J. Cook, D.D., United States; H. G. Whiting, Esq., London; Miss S. M. Gould, Bristol.

Also the presentation of the following Works to the Library:—

"United States Geological and Geographical Survey," Vol. XI., &c. *From the Survey.*

"Quinology of the East Indian Plantations." By J. E. Howard, Esq., F.R.S. *From the Author.*

"Revelation and Science in complete Harmony." By J. Coutts, Esq. *From the Author.*

The following paper was then read by the Author:—

NATURE'S LIMITS: AN ARGUMENT FOR THEISM.

By S. R. PATTISON, ESQ., F.G.S.

I SHALL endeavour to prove the existence of God from the fact that all natural phenomena are limited, and therefore subject to law, which requires the existence of a limiting power, the *science* of which is not disclosed by the phenomena, but the *cognizance* of which is disclosed to us by our experience of cause and effect, whereby we are led to a First Cause; or, in other words:—Science is the discovery of established order in observed phenomena. The existence of order implies limits effected by ordination, limits imply a limiting power, a cause. The inference of a cause necessarily leads, as we prosecute it, to the affirmation of a First Cause, and this, by a like necessity, leads to the parallel conclusion that the First Cause must be infinite, or, in other words, must be Deity.

2. As Lacordaire eloquently puts it:—"Infinity is the first mark of the being without cause; does nature bear this sign?

Let us examine it. All that we see there is limited, all is form and movement, form determined, movement calculated; all falls under the straightened empire of measure, even the distances which remain unknown to our instruments, but are by no means unknown to our conceptions. We feel the limit even when our eye does not perceive it; it is enough for us to seize it at one point to determine it everywhere. The infinite is indivisible, and were but one single atom of the universe submitted to our feeble hands, we should know that nature is finite, and that its immensity is but the splendid veil of its poverty."*

3. If all phenomena are limited by law, then they cannot have been self-originated, nor are they self-governed. A beginning without a Creator is inconceivable, and equally so the existence of law without a Ruler.

4. It makes no difference to this argument whether the limits of phenomena were fixed from the first, or vary through development under fixed laws; both are indications of a Creator. More roads than one lead to this terminus. On inviting you to follow the one indicated by the title of this paper, I first offer a few reasons for the pursuit.

5. There is a vague creed of *material infinity* pervading much of published scientific thought, a creed which is really quite at variance with the admissions and conclusions of the masters of science. Into this expanse of infinity it is stated that religion is entering, stripping itself free from the shackles of Scripture and of churches, and proceeding on a limitless career of human improvement. The assumption that nature, and the order of nature, are unbounded, constitutes the groundwork of these arguments.

6. In opposition to this assumption, I desire to maintain and urge that a consideration of the phenomena leads us to exclaim with Dante,—

> "All, as they circle in their orders, look
> Aloft; and, downward with such sway prevail,
> That all, with mutual impulse, tend to God."

7. The sentiment in question has arisen out of two great unverified hypotheses,—that of Uniformitarianism, inaugurated by the late Sir Charles Lyell, and Evolution, promoted by Mr. Darwin. These have given to our literature, language and colour far beyond the bounds of science. The two announcements of modern philosophy came so apparently complete, so easy of application, so facile to the

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* *Existence of God: Conferences*, p. 17.

memory, that each seemed to be a real advance towards axiomatic knowledge. Both were introduced with much literary grace, and with copious familiar illustration, and although recent geological research has disproved Uniformitarianism, and recent Biology has disowned Darwinism, yet the influence of their easy fascination still pervades the world.

8. It is in order to examine the bearing of some old arguments on the new facts that I have chosen the present subject.

9. Of the material universe, and of life on the earth, it may be alike said that they are moving, moving either towards a boundary or into infinity, either by ordination or by self-caused development. In the former case we are under the necessity of postulating a Lawgiver, in the latter case we are under no such necessity, and must simply leave this question as we found it.

10. I desire to oppose both Atheism and Agnosticism; both the conclusion that there is no God, and the doctrine that we cannot possibly know of any. Atheism does not now rear itself up in noisy opposition to religion, but, looking at material phenomena, calmly announces that no God is there, and further, that not being there, He can be nowhere else, and that we are governed by the conditions in which we are found. It declares that this persuasion is a stage, the present stage, in the history of all things, and that the reign of virtue on the earth, about to spring from social science, is the bright future of humanity. It addresses us in untechnical phrases, and appeals to our love of independence and freedom. It denies the existence of religious instinct in man, and of any religion higher than social virtue, and, of course, ignores a future life as well as God. Leaving to others the task of showing how much narrower is this specific than is the need for it, my aim is to prove that external nature is absolutely unequal to the task of government thus imposed on it, because it is itself a finite creature, and the ruler required is one higher than the finite: that modern philosophy, which subordinates man to his environments, *i.e.* to nature, is confuted by the consideration that both nature and man are equally subordinated to some higher law.

11. The reiteration of the argument may be tedious, but when propositions which were supposed to have been long ago dead and buried, are summoned from their graves, and walk about at noon-day, it ought not to be objected that they encounter forms as antiquated as themselves. The proposition that we know nothing, either one way or the other, as to the existence of God, is now made as the outcome of physical

science, but it is of course well known as an opinion uttered in the very infancy of recorded thought. The ancient anti-Theistic doubts were dealt with by Plato, by Cicero, and other renowned "seekers after God." A quotation from Cicero will serve as a sample of the Theistic argument which has come down to us with all the glow of twenty centuries:—"Philosophers, if they are surprised at first at the sight of the universe, ought, when they have considered the regular, uniform, and immutable motions of it, to conceive that there is some being, that is not only an inhabiter in the celestial and divine mansion, but a ruler and governor of this mighty fabric."*

12. But this ancient consideration, although it has brought conviction and rest to the most illustrious minds from the beginning, cannot be expected to satisfy the adventurous spirits of the present. Emboldened by conquest, they reach, like Alexander, the ends of the earth; but, unlike him, they then have no desire for other worlds.

13. The reason for at present urging or reiterating Theistic truths is found in the astounding statements to the contrary made by scientists in support of the evolutionary theory. Professor Tyndall, at Birmingham the other day, is reported to have said, "It is now generally admitted that the man of to-day is the child and product of incalculable antecedent time. His physical and intellectual textures have been woven for him during his passage through phases of history and forms of existence which lead the mind back to an abysmal past." And again, "Hunger and thirst, heat and cold, pleasure and pain, sympathy, shame, pride, love, hate, terror, awe—such were the forces whose interaction and adjustment during the immeasurable ages of his development wove the triplex web of man's physical, intellectual, and moral nature, and such are the forces that will be effectual to the end."

14. But there has not been, and there is not, any such general admission of the evolutionary origin of all things. The assumption of it is a trick of advocacy.

15. As a further instance of this unwarranted habit of modern thought, I adduce the following closing sentence of a lecture recently delivered by Professor U. C. Marsh, of Yale College, the president-elect of the American Association for the Promotion of Science, and a distinguished Palæontologist:—"In this long history of ancient life I have said nothing of what Life itself really is. And for the best of reasons, because I know nothing. Here at present our ignorance is dense, and yet we need not despair. Light, Heat, Electricity, and Mag-

* *De Nat. Deorum*, book ii.

netism, Chemical Affinity and Motion are now considered different forms of the same force; and the opinion is rapidly gaining ground that Life, or vital force, is only another phase of the same power. Possibly the great mystery of Life may thus be solved, but whether it be or not, a true faith in Science admits no limit to its search for Truth."

16. We have the open avowal of anti-theistic opinions, and frequently the quiet assumption that the question has been settled by the verdict of a jury of experts. No longer is anti-Theism shrouded in scientific pamphlets or foreign languages, but it pervades periodicals, school-books, and general literature.

17. At the Munich meeting of the German Association for the Promotion of Science, Professor Haeckel is stated to have said that there is no plan of creation but "the accidental coincidence of mechanical causes"; and that the theory of the supernatural origin of life is "an old irrational myth"; and that carbon, "in its complicated combination with other elements, causes the peculiar physiological properties of organic compounds."*

18. I maintain that the true lesson taught by modern science is the very reverse of all this; that the laws of force, and of its conservation, and the ascertained limits of natural things, do actually bring the Divine Artificer nearer to our apprehensions than before.

I. *Limits disclosed by Science.*

19. Science has its limits. In its study we are carried on by our preceptors until we come to the acknowledged unknown. They then leave off, saying only to us that all beyond is unknowable; they stand still and point out to us the unpassed barrier. But instead of acquiescing in the apparently inevitable, or seeking if haply other sources of knowledge may exist, they invent a hypothesis of materialism, and add it to their philosophy, as though it were part of their discoveries. The Theist, arriving before the same veil, (not to be lifted by Science,) feeling, like his brother inquirer, irrepressible desire to penetrate the mystery of being, looks into his own experience of cause and effect, and, with the concurrence of the majority of mankind, accepts the deliverance expressed by Hooker,—"Only thus much is discerned, that the natural generation and process of all things received order of proceeding from the settled stability of *divine understanding*."

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* *Nature*, October 4, 1877. Meeting, September 17.

20. Atoms are limited by law. It is established that all atoms possess the same physical properties, and obey the same laws. The molecules of matter are evidently as sharply defined, as unworn, as at the first. They adhere to the law of their limitations, thus going far to prove that they have no inherent power of change. Use as we may the most penetrating powers of the microscopist, or the subtlest analysis of the chemist, or the more extended methods of the astronomer, we find every material object bounded and governed by law. The eternity of matter, though a conceivable idea, is yet unphilosophical, because unwarranted by what we know, and as we accept this conclusion it becomes impossible to avoid the question, "Whence, then, its limits?" If the waxing and the waning of all natural phenomena be found to extend to the whole Kosmos, and to characterize all the operations of nature, through all time, the question immediately occurs, "What set on foot the waxing and the waning?" If, as we believe, these cannot be accounted for, save on the theistical conception, we claim for the latter a place in every complete system of philosophy. The idea of many modern writers is that, by the aid of science, we may attain a knowledge of the very nature of matter itself. But Professor Tait observes, on the contrary, that "nothing is more preposterously unscientific than to assert that with the utmost strides attempted by science, we should necessarily be sensibly nearer to a conception of the ultimate nature of matter."*

21. Professor Clerk Maxwell said, at Liverpool, in 1870, "In tracing back the history of matter, Science is arrested when she assures herself, on the one hand, that the molecule has been made, and on the other, that it has not been made by any of the processes we call natural." An eternal progression is an impossibility; it is a contradiction, for progress supposes an end towards which it moves.

22. The evolutionary supposition is contradicted by fact, for on this supposition all development must have begun alike, and all be at the same stage at every moment in time, whereas we find its subjects in every possible stage at the same time.

23. Force is limited. By the correlation of force we get the fact of an energy working through various modes, the source of all change. We know of it only in its limited condition as it operates through matter. However mysterious may be the union between matter and force, we never find the latter apart from a molecule of the former. Pursue the idea

* *Recent Advances*, p. 284.

as we may, we are ultimately brought face to face with Force as a power working through matter, imprisoned always, yet ever free to move from one goal to another. When we term it Physical Force, Vital Force, or Volition Force, we have only expressed the idea of a power with law for its limits. Although energy is so readily convertible, its sum total cannot be added to, nor reduced. In quantity, as well as quality, it has absolute limits. We find it almost impossible to conceive of the minuteness of the particles of joint matter and force which science compels us to acknowledge. We are told that every molecule in a mass of hydrogen, at ordinary temperature and pressure, has, on the average, 17,700,000,000 collisions per second with other particles.

24. Perpetual motion is impossible, not only on account of inevitable change of form in materials, but because you cannot transfer back again all the force which you transpose into heat. Some of the heat is lost in the process, and the possibility of a perpetual equivalent is destroyed.

25. The absolute creation and absolute destruction of matter or of force are equally beyond scientific conception, but the translation of either from or into some form imperceptible to us is an everyday occurrence. Nor does matter or force ever escape from the dominion of law. No atom is forgotten by the regulations which fix and limit its being. Evolution is an orderly process, leading to impassable limits.

26. The whole course of the universe is the collective result of what are called the Laws of Nature. Dr. Whewell puts it, "All things are ordered by number and weight and measure; 'God,' as was said by the ancients, 'works by geometry'; the legislation of the material universe is necessarily delivered in the language of mathematics; the stars in their courses are regulated by the properties of conic sections, and the winds depend on arithmetical and geometrical progressions of elasticity and pressure."*

27. Creation is limited in time. Sir William Thompson and the physicists make out that, assuming the continuance of present physical laws, the earth cannot have been in existence more than from ten to fifteen millions of years. The present thermal condition of the earth requires that it should have actually come into existence as a globe within this definite limit.

28. We now know that a part of the light and heat of the sun and stars goes out into space, and does not return; and that a part of the motion of the great bodies in the universe

* *Bridgwater Treatise*, p.

is going off in friction, so that these bodies must gradually become cooler, and the earth become unfitted for the habitation of man. The heavenly bodies must in this way lose energy of rotation and revolution, the sun fade and die as a light-bearer, and the universe now visible be destroyed. This is the grandest instance of the actual limitation of the "things which are seen." We are every moment in the presence of powers destined to bring to a perpetual end the form of all things. The actual has come out of the possible, and is returning again into the same.

29. Assume that the retardation of the planetary motions will ultimately bring them all to a gaseous state, and that, in place of a solar system, there will only be a nebulous blot. Assume further, as expressed by Mr. Herbert Spencer, that then the increased molecular motion will effect other starry systems and lead to a re-transfer, and so to the beginning of another system, and so on; yet the fact remains, that all this is effected by law; no portion of time exists, no atom of matter, which is not dominated by limits; limits not inherent in matter or force, but imposed by government.

30. Glancing at Geology we find that the limits disclosed by it are truly remarkable, considering that it is the science on which the opposite conclusion has been based. Not only are the component minerals limited by the rigid laws of crystallography, but the strata into which these are compounded are defined by characters universally prevalent, whilst the accompanying fauna and flora are limited by distinct beginnings and the occurrence of distinct species throughout. Every now and then the exact limits in particular instances, as well in stratigraphical as in mineralogical and biological aspects, are disputed and re-arranged; but this only proves the existence and importance of the limits themselves. In Geology there is no running out into infinity, nor any tendency to boundlessness, either in its ancient or modern phenomena.

II. *Further Limits.*

31. Our power of observing nature is limited to the exercise of our senses, and these can of course only operate within the limits of time and space. We can conceive of an infinity of time and space, but we cannot know it; we can, therefore, conceive of an indefinite extension of knowledge, but it must be under conditions wholly different from the present.

32. Man's power over nature is limited. Enormous as are the strides which he has made in this direction since the

palæolithic age,—great as are the changes effected on the surface of the earth and in its productions by his agency, yet we find limits placed everywhere barring infinite progression. He is powerless to extinguish one atom of the matter or force with which he plays, he cannot alter or diminish the great currents which circulate within or around the globe. He can translate but not originate, combine but not create.

33. Life, as a working power, is plainly limited by the machinery through which it works. The machine requires constant supply of food. Life itself is only a directing force. Life is a peculiar form of action in living bodies at variance with the laws of matter and motion. But these life-motions themselves are limited, so far as we can discern, by the laws of environment. At present our powers of investigation are completely baffled by life. We stand within the shadow of some mightier Power than the universe displays fully to our gaze. Evolution, by sure footsteps, leads to inevitable decline and death. Evolution into immortality is inconceivable. There can be no modification equal to a total change at one bound, and intermediate steps there are none.

34. Life is limited in its manifestations. It is well established in all the provinces of biology, that life exists in certain types only; these types are subject to variations within limits, but such variations are always liable to recurrence towards their primitives, so that both type and variety are limited; the only difference being that the one is far more temporary than the other. It is therefore evident that life is limited by law; laws of type and heredity govern it.

35. Heredity, too, has its limits. After controlling the mode of evolution of a race, it controls the mode of its change or extinction. Deviations, either in the physiological or moral order, appear, grow, prevail, decline, and become extinct. The process may be arrested and held in suspense by conditions either natural or artificial, but, these being removed, the tendency towards the former average state commences, and works out a restoration to pristine form by natural law. The basis of the evolution is a law of heredity, it is assumed by the evolutionists that this is without reversals, but of this we have no experience. If it were so, it must still be limited. Mr. Herbert Spencer says, "No more in the case of man than in the case of any other being, can we presume that evolution has taken place, or will hereafter take place, spontaneously."

36. Moral heredity has its limits as well as physical. There is a tendency in every individual and in every family to return towards the average condition. Every observer who is old

enough to remember successive generations, cannot fail to recognize this fact.

37. In social science we see that the effect of the causes which work among aggregated masses of mankind is usually to produce a civilization more or less progressive. But we also see, in the daily records of poverty and crime, how civilization itself inevitably leads, in its turn, to degeneracy again, unless arrested by stronger motives than nature supplies, and hence there are natural limits to social progress; limits which many nations, like the Chinese, have long ago reached.

38. Instinct is limited. It is so by the law of heredity on which it is founded. Mr. Darwin introduces the conception of the variations of instinct becoming fixed into habits, modified by external circumstances, and transmitted with all improvements. Mr. Spencer has carried this speculation further, and has endeavoured to trace a natural growth of instinct from a simple reflex action onward into memory. But the facts are admittedly wanting to support either of these ingenious hypotheses. The observed order of things is, that instinct has its barriers as well as its laws. We may succeed in instinct, as in form, by the art of training, in producing certain alterations or fresh adaptations; but the moment we do so a conflict is set up between the new habit and the old tendency, in which the latter ultimately is sure to win.

39. Development is altogether limited by the law of its germ. We cannot, therefore, conceive of any *essential* addition, such as intelligence, being added during growth. The intellectual functions of man cannot be conceived of as growing out of his material structure.

40. Nor can we conceive of the production of new life by any action of matter. The experiments of Dr. Tyndall on spontaneous generation, and the researches of others in the same direction, forbid the supposition.

41. Not only do we everywhere encounter limits in nature around us, but we find them in the microcosm within us. We stretch our mental faculties to the utmost, only to meet with the uncognizable. We experience a limit, we are at the end of our chain. Professor Tyndall puts this very plainly. He says: "Were our minds and senses so expanded, strengthened, and illuminated as to enable us to see and feel the very molecules of the brain; were we capable of following all their motions, all their groupings, all their electric discharges, if such there be, and were we intimately acquainted with the corresponding states of thought and

feeling, we should be as far as ever from the solution of the problem: How are these physical processes connected with the facts of consciousness."* Indeed, it might have been concluded, that as it is admittedly impossible to understand the mode in which the physical forces exchange into each other, it is not to be expected that we should comprehend how they are related to mental or nervous conditions.

42. Mr. Herbert Spencer has well expressed the limitations of human knowledge. Supposing the man of science, "in every case able to resolve the appearances, properties, and movements of things into manifestations of force in space and time, he still finds that Force, Space, and Time pass all understanding. Similarly, though the analysis of mental actions may finally bring him down to sensations, as the original materials out of which all thought is woven, yet he is little forwarder; for he can give no account either of sensations themselves, or of that something which is conscious of sensations. Objective and subjective things he thus ascertains to be alike inscrutable in their substance and genesis. In all directions his investigations eventually bring him face to face with an insoluble enigma. He learns at once the greatness and the littleness of the human intellect."†

43. Our knowledge of God is of course limited, both by the extent of our faculties and the mode of His manifestations. He is represented to us by qualities existing in ourselves. Hence the enormous addition to our knowledge afforded by the Incarnation.

44. The idea of the personality of God is expressive of self-imposed (and, of course, self-variable) limits, as for the purpose of a manifestation of Himself; but all human personality is only another term for special limitation by paramount law or adaptation. The common belief of mankind that we are formed, soul and body, by some superior hand, bears testimony to the conviction of our limited nature. True, we are a law unto ourselves in the matter of our will, but we cannot escape into the infinite, either by way of our will or by way of evolution, for we are everywhere subject to law.

45. We find limits where our curiosity would most desire that there should be none,—at the extremes of psychology and physiology, the relations between mind and matter. The functions of these two are not relations of exchange or conversion, or progression, but of adaptiveness. Each is at the summit of its own series of facts; and, that each corresponds with the other, is the ultimate observation we can make.

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* *Fragments of Science*, p. 6. † *First Principles*, p. 66.

46. But if complete knowledge is limited, can this also be said of belief? Belief is certainly not limited by knowledge, that is to say, by clear complete knowledge. In common life we constantly admit this,—indeed most of our actions are grounded on knowledge less than complete. This is the explanatory fact which appears to reconcile Christianity and Philosophy, namely, that we may believe that which we cannot fully conceive of. We may believe a thing to be possible without knowing how. True, we cannot go beyond our power of apprehension. Faith finds its limits here. There must always be some grounds of faith which are the subjects of reason. These reasonable grounds suggest the object of faith; the willing student or believer lays hold of the dimly-seen guide and follows, whilst, it may be, the over-cautious or unwilling, refuse to trust to analogies or imperfect knowledge, and so stay without. The postulate so apprehended frequently becomes, however, verified in its progress. Knowledge apprehends, and the moral function of faith trusts, and thus the former becomes power. The confidence of faith is limited only by the limit in the supplies which cognizance can bring to it. The unknowable is not always unbelievable. Sir William Hamilton says: "The main scope of my speculation is to show articulately that we must believe as actual much that we are unable positively to conceive as even possible." Science deals with truth unfolded, faith with truth discovered but undeveloped.

> "The deep things, I replied, which here I scan
> Distinctly, are below from mortal eye
> So hidden, they have in belief alone
> Their being; on which evidence hope
> Is built." *Dante.*

III. *Law.*

47. Remembering how some of the profoundest philosophers and finest rhetoricians of ancient and modern days have expounded the office of law in the universe, it appears to be quite unnecessary to re-state the argument on this head. But, in spite of all that has been said, we are constantly told, in literature purporting to be scientific, that all things are progressing towards some indefinite future development, by reason of inherent properties and external conditions; and that the phenomena do, in fact, make and modify the laws.

We are invited to believe that nothing is really certain save progression; that natural advance is inevitable; and that religion consists only in accepting the action of circumstances, fulfilling social duty, and waiting on destiny. These sentiments have a secondary influence on current thought. Perhaps they express the love of inertia which seems to be a property of mind as well as matter; at all events, they serve as an apology for shrinking from the severer tasks which the acceptance of supernatural religion demands. I must, therefore, briefly refer to the function of law, as a limiting power, in order to rescue it from the category of mere necessity, by which it is sought to be substituted.

48. Whatever province of the universe we choose whereon to exercise our faculties of observation and reasoning, we soon come to the conclusion that there is a substratum of power, an inwrought energy, which accompanies us in all our investigations. There is something behind the phenomena, above the law, beyond the methods. We may term it inexplicable, or unknowable, because science cannot analyze, or compound, or describe, or even express it. But the universal sense of mankind terms it Divine.

49. The phrase so often used by chemists in order to describe the action of a substance, "behave,"—how it may be expected to "behave," and how it does "behave," shows their confidence that it will act in a certain manner, that its conduct is determined by law. If they feel compelled to say with Professor Huxley, that the ultimate analysis of things is, and must be, incomprehensible by us, the presence of a limiting and guiding power beyond the phenomena must I think be conceded. We at all events must apprehend the existence of the law, and must place a lawgiver in the blank left by the Professor for the incomprehensible. The very idea of law implies that of a force by which it is upheld; whether we speak of a law of nature or of social science. The phenomena are limited in their nature, the law is limited in its nature too; but beyond these, whether in the realm of physics or of mind, we come to the idea of a personal God. It is evident that all besides Him is limited, and no set of phenomena can be self-originated or endless.

50. The Duke of Argyll eloquently sets forth the progress of the idea, and Hooker with equal force depicts the consequences of the contrary supposition. The Duke says: "The whole world around us, and the whole world within us, are ruled by law. The perception of this is growing in the consciousness of men. It grows with the growth of knowledge;

it is the delight, the reward, the goal, of Science."* Hooker, on the alternate supposition, exclaims: "Now, if Nature should intermit her course, and leave altogether, though it were but for a while, the observation of her own laws; if those principal and mother elements of the world, whereof all things in this lower world are made, should lose the qualities which now they have; if the frame of that heavenly arch erected over our heads should loosen and dissolve itself; if celestial spheres should forget their wonted motions, and by irregular volubility turn themselves any way as it might happen; if the prince of the lights of heaven, which now as a giant doth run his unwearied course, should, as it were through a languishing faintness, begin to stand and to rest himself; if the moon should wander from her beaten way, the times and seasons of the year blend themselves by disordered and confused mixture, the winds breathe out their last gasp, the clouds yield no rain, the earth be defeated of heavenly influence, the fruits of the earth pine away, as children at the breast of their mother, no longer able to afford them relief; what would become of man himself, whom these things do now all serve? See we not plainly, that obedience of creatures unto the Law of Nature is the stay of the whole world?"†

51. Law is not itself a cause but an effect. There must have been an antecedent reason, in other words a Lawgiver, and of course the conception of any other than an unlimited, unconditioned God, is wholly inadmissible.

52. Although "Order" is "heaven's first law," and is universal so far as can be observed, reaching to the deepest recesses of earth and ocean, to the farthest height in the azure above, yet the mind refuses to rest in the mere fact of order. It inevitably springs to the conclusion of an Ordainer. Our own consciousness is the foundation of this conviction. We can analyze it no further, nor is it necessary that we should do so. Personal experience of the workings of our own intelligence leads us to apply at once to consciousness to explain the phenomena. We do not know all that is demanded of us when we are asked, "How came these things so?" but we know, that whatever else may be involved that we do not know, we do know, from our own experience, that the "How" contains an intelligent cause.

53. If all things are limited by law, and that law is

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* *Reign of Law*, chapter ii. † Book i. p. 206.

divine, then this is only another way of saying that nothing is absolute but God. The existence of a Divine, omnipotent Governor is proved. In this way the Divine Personality becomes the great objective truth in all the domains of thought, to the utter displacement of Pantheism, and in full vindication of the accepted theology of the Bible. The immanence of God in creation, which is affirmed in Scripture, becomes equally the testimony of nature.

IV. *Conclusion.*

54. We arrive at this conclusion, that scientific facts are explicable by the scientist only up to a certain point. The real nature of the things themselves lies beyond the utmost research, and yet they are not infinite, for they are regulated.

55. As nature itself is not infinite, so neither is it personal, as some subtle metaphysicians have surmised, after the example of the followers of Confucius. We are left, therefore, without any adequate solution, from the phenomena themselves, of the Theistic problem arising from all things around and within us. Nature is our companion and guide until we come to the higher solitudes of thought, where she veils her face and pleads incapacity to penetrate beyond.

56. It is a strange and wonderful spectacle that we behold in the great Temple of Study,—on the one hand, the priests of physical science inspecting, as it were, the entrails of their opened victims, as of old, refusing all other omens,—pausing in vain for a reply to their questionings; and on the other, the priests of mental and moral science bending over their own inner consciousness, and refusing all auguries besides, also waiting in silence, and in vain. And is there no reply?

57. Yes! for although there is no science of the Infinite, yet the Infinite is cognizable, and its cognizance is the foundation of natural religion, for it displays to us the only illimitable, the only unconditioned power, the Personal God. In spite of all the statements, or even apparent demonstrations, that God is unknowable, the fact remains that in all ages and places men have appeared who have placed God in this otherwise unknown infinite. Whether it be by intuition, according to one school, or by the aid of intuitive conditions, according to another, the conception is widespread, and all but unanimous. Let it be conceded that there is no science of Natural Theology, yet it can never be said that there is no sentiment concerning it.

58. The idea of the unlimited, of infinity, or of eternity, we gain only by repetitions of the idea of that which is bounded, adding one term to another, until we are tired of the process. When the logicians tell us that the Infinite is unknowable, they cannot mean to say that it is unthinkable; they admit the existence of such a conception. This is sufficient as a ground for belief, and, consequently, of responsibllity. The universal consent of mankind proves that the idea of an omnipotent omnipresent God is a practicable thought, congruous to the mind. To affirm that He is only conceived of in symbol, does not affect the argument, for the mode of thought presupposes a possible subject.

59. Having learnt that science has no complete explanation of its own, we may propose one which comes to us from another quarter. We transfer the case from the Laboratory to the Forum; we put in a document, bring forward our attesting witnesses, and require its contents to be read. Perhaps it may not only yield important facts *per se*, but take up the clue abandoned by science, and conduct us into the unknown. Why should inquiry and research, so laudable elsewhere, cease to be praiseworthy here? Why may we not ask, of this other professing guide, the way, in the region so dark to philosophy? Doing this, we adduce the words of an eloquent ancient scholar, St. Paul, who gives, as the result of his considerations, the following:—"By *faith* we understand that the worlds were framed by the word of God, so that things which are seen were not made of things which do appear."*

60. It may be urged, in opposition, that the limits referred to exist not in the things themselves but in the mind conceiving of them; that the latter do contain within themselves sufficient reason for their being. But though we admit that we do not know the real ultimate nature of substances, yet neither does the objector pretend to this knowledge, and therefore we are at least as much entitled to say that matter obeys laws as the objector is to say that matter is a law to itself. Surely we may say with Socrates, "Should we not be wiser in assenting to that other argument, which says, as we have often repeated, that there is in the universe a mighty infinite, and an adequate limit"?

61. But it may be further objected, that the limits established lead us only into agnosticism. That although we

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* Hebrews ii. 3.

may prove the existence of something beyond matter and behind force, which for the present we call law, yet of the primitive and fundamental cause of this we know nothing. I accept the statement, and admit that we cannot "by searching find out God"; yet, in the language of the same record, I would affirm that He is "not far from every one of us,"—in the power of our own apprehensions as we stand before the phenomena. Mr. Atkinson, in one of those letters, recorded in the Autobiography of Miss Martineau, which were so influential in promoting her avowal of atheism,—after stating that of the First Cause we know absolutely nothing,—adds the remarkable admission, "We judge it to be something positive; to so much the nature of the mind compels assent; but we do not know what this positive something is in itself, in its absolute and real being and presence. We must rest content to take it as we find it, and suppose it inherently capable of passing or flowing into all those effects exhibited throughout nature." What is this in effect but saying with Aratus,—quoted by St. Paul,—"God that made the world and all things therein, seeing that He is Lord of heaven and earth, for in Him we live and move and have our being"?

62. Whilst atheism seeks to displace the image, it would leave the shrine vacant, and the mind involuntarily fills the void. I remember seeing in the town of Vire the ruins of a Protestant church destroyed by the mob a century and half ago, and on the highest fragment, beyond the reach of the destroyers, there yet flashed out in the sunshine the golden letters of the first commandment, "Thou shalt have no other God but me!" In like manner does nature, in spite of all destructive criticism, ever lift aloft her ineffaceable testimony for God.

63. I briefly sum up by saying that it is established, and indeed admitted, that matter and force, mind and life, all exist in relation to something else. They are not alone in the world. Something more than mere being must be attributed to each of them. If we call the limiting power law, or if we cloke it under the term of necessity, either of these requires the existence also of something besides. We cannot rest without some conception concerning this higher power; no one has yet succeeded in offering any reasonable hypothesis concerning it save that of Theism; we are therefore driven to the acknowledgment—

"A God! all nature cries aloud!"

64. I crave to be allowed to add the observation that the pursuit of Theism is eminently remunerative. Light is pro-

jected, as from Aurora, on the onward path, and it is light which holds the heat-rays in combination. For it is impossible to realize conclusions of the understanding on such subjects without having the affections also suitably raised towards Him who is the Alpha and Omega, the source of all love, as well as of all power.

The CHAIRMAN.—I am sure that our best thanks are due to Mr. Pattison for the valuable paper which he has just read. (Cheers.) We shall now be glad to hear any remarks thereon.

Rev. J. FISHER, D.D.—I regard this paper as one of especial importance, I read it with very great interest indeed, and with feelings of the strongest approval; though I might perhaps take exception to a statement made in the tenth paragraph, where Mr. Pattison seems to distinguish man from nature, but I rather think he does not make the statement as his own, but simply adopts it from some other person. Mr. Pattison says in that tenth paragraph :—

"The ruler required is one higher than the finite—that modern philosophy which subordinates man to his environments—*i.e.* to nature, is confuted by the consideration that both nature and man are equally subordinated to some higher law."

The sum of being, in my estimation, is God and Nature. Man belongs to nature, and is comprehended under it, and we cannot possibly put him out of nature. The paper speaks of the statements of some great scientists as being only hypotheses and assumptions, and I quite agree with Mr. Pattison, that the conclusions to which many such come, and the statements they make, are in many cases little better than hypotheses unproved and assumptions unwarranted. I would scarcely say, perhaps, as Mr. Pattison does in his fourteenth paragraph, that the assumptions made by Professor Tyndall are "a trick of advocacy."

Mr. DAVID HOWARD.—I think this paper especially interesting to those who are concerned with the handling of science in popular addresses. To such people the great temptation is to leave out the limitations. It is more pleasant to put the positive than the negative side, and it is quite fair and correct to do so to a certain extent. You say what you know, rather than what you do not know. But the result is that, undoubtedly, the popular apprehension of science is that of a series of absolute truths, absolutely proved, and of absolute and infinite application; and it is very well that we should be reminded that this view is not the true one; for some of us, who ought to know better, are not free from the habit of mind which leads us to think that our knowledge is infinite, and that the applications of the laws we lay down are infinite. Sooner or later the exception which

does not prove the rule arises, and then you have to alter your rules or laws so as to accommodate the exception. Still these exceptions are naturally kept in the background, in popular science especially, and there is a great temptation, even in learned scientific treatises, to keep them a little out of sight.

J. A. FRASER, Esq., M.D., I.G.H.—I should like to ask a question of Mr. Pattison. He says in his 21st paragraph :—

"An eternal progression is an impossibility ; it is a contradiction, for progress supposes an end towards which it moves. It is contradicted by fact, for on this supposition all development by evolution would have begun alike and all be at the same stage in time, whereas we find its subjects in every possible stage at the same time."

Well, probably all atoms began alike in one sense, but why must they all be at the same stage in time? I do not know that I quite understand this passage in the paper, but possibly that is my own and not Mr. Pattison's fault. In his 46th paragraph, Mr. Pattison says :—

"This is the explanatory fact which appears to reconcile Christianity and Philosophy, namely, that we may believe that which we cannot fully conceive of."

Here, I think, is one of the great mistakes which many men in the present day make ; they insist that they must understand all before they believe : for myself, I think I may believe, and I do believe, a great many things that I cannot fully understand, and never shall fully understand in this imperfect life. There is a well-known Latin proverb to that effect, but the same idea is given us in that passage of St. Paul's, "By *faith* we understand that the worlds were framed by the word of God, so that things which are seen were not made of things which do appear."

Rev. S. WAINWRIGHT, D.D.—It is a couple of years since I was here before, but in the interval I have read the papers which have been laid before this Institute, and need not say that I have enjoyed them as much as most of the members ; I fully agree with the remark already made, that this is an especially valuable paper. May I, however, draw attention to some salient points. I object to leaving the whole conclusion so dogmatically although so neatly laid down in the very second sentence of the paper, where Mr. Pattison says :—

"The existence of order implies limits effected by ordination, limits imply a limiting power, a cause."

If this is true, there is no need to write anything more ; the object of the whole paper is gained. But is it so? Does order imply limits? Ask Professor Huxley. I know Mr. Pattison better than to suppose that he means to rely on this statement alone ; he writes the paper in support of these theses, but it appears to me that our case would not be weakened if he proceeded in the other direction. It may be argued that Mr. Pattison has

written the paper with a view to make good these initial statements, but my objection is, that any one getting hold of the paper and looking merely at the opening sentences might be tempted to say, "The author assumes the whole thing in advance," and then throw the paper down. I think the case would have been stronger if the paper did not assume at the very outset, the thing which was going to be proved. Then in his third paragraph Mr. Pattison says :—

"If all phenomena are limited by law, then they cannot have been self-originated, nor are they self-governed."

But one of those to whom we stand opposed might well ask, "How do you know that?" I think it important for us to remember that it has been the just pride of this Institute, that we do not meet here to talk as if we had nothing but the Bible at our back, but to talk as men who, having the Bible Truth at our back, can argue on grounds that other men use against us in their speeches. What we have to cope with is a condition of mind which is just the very opposite of this—which declares on the one hand that all phenomena are limited by law, and yet on the other hand, that all phenomena are self-organized. There is a passage in Mr. Pattison's seventh paragraph about which I wish to ask him a question. He there says :—

"Recent geological research has disproved uniformitarianism, and recent biology has disowned Darwinism."

These words "disproved" and "disowned" are judiciously used, but I want to know if Mr. Pattison refers in relation to biology to the recent experiments with regard to the *Bactaria*; and, with regard to uniformitarianism, whether he refers to anything since the death of Sir Charles Lyell. I may mention that Sir Charles Lyell himself made a very damaging admission against his own theory of uniformitarianism, when he said that no lapse of ages would ever suffice to scoop out the bed of the Thames. Then I come to a passage at the commencement of the 20th paragraph, where Mr. Pattison says :—"Atoms are limited by law." When I find Professor Clerk Maxwell and Sir John Herschel declaring that the primary molecules are manufactured articles, I think that, considering that you cannot have a manufactured article that has not been made on a plan and for a purpose, it is unnecessary to say another word on this part of the subject, when these men, masters of their own special departments in science, tell you a fact like this. (Hear, hear.) In the 33rd and 35th paragraphs we have two or three important passages. Mr. Pattison says :—

"At present our powers of investigation are completely baffled by life" (par. 33).

"There can be no modification equal to a total change at one bound, and intermediate steps there are none" (par. 33).

"The process may be arrested and held in suspense by conditions either natural or artificial, but, these being removed, the tendency towards the

former average state commences, and works out a restoration to pristine form by natural law" (par. 35).

Now I lay stress on this because facts like these are just as true as that twice two are four, and it is important to bear in mind that not one of these facts has been altered by anything done on the other side. You may take a sponge or a cork and hold it under water and so long as you hold it there it will remain submerged, but the day will come when you cannot hold it down any longer, and then, by an inherent virtue or property of its nature it comes to the surface. You can alter the limits within limits, but you cannot remove them, and the tendency to the former average state recommences. In his 38th paragraph Mr. Pattison says :—

"The observed order of things is that instinct has its barriers as well as its laws."

Of course this is so, and instinct in the same species was the same in remote ages as it is to-day. If instinct had not its barriers, the instinct of the beaver of to-day would be a different thing from the instinct of the beaver in former times. Then Mr. Pattison asks a little further on :—"How are these physical processes connected with the facts of consciousness?" There is a very remarkable passage in Professor Huxley, and we need nothing further. We are anxious to vindicate that there is a spirit in man, and that the Almighty giveth him understanding. Now it is well known that it takes about seven years for the change of the whole of the constituent portions of our bodies; but though this is so, the inhabitant is still the same. Do you know this by consciousness? What is consciousness? Nobody knows, and I am only saying this as a reason for dwelling so strongly on Professor Huxley's admission, when he says : "How it came about that consciousness should be associated with the irritation of nervous tissue, is as utterly incomprehensible as that the djin should appear in the Arabian story at the rubbing of the lamp." We have Professor Huxley telling us, that it is utterly incomprehensible why he should be conscious of anything. After all there is more in heaven and earth than is dreamed of in our philosophy, and we have to fall back on the old truth, that "there is a spirit in man, and the Almighty hath given him understanding." In his 47th paragraph Mr. Pattison says :—

"We are constantly told . . . . that the phenomena do, in fact, make and modify the laws."

Mr. Pattison objects to this statement, but I do not object to it at all. I make a point of surrendering everything that these men can make a fair pretence of asking me to surrender, and therefore I give that up. Even if it were not so I would still give it up, and would ask : "Well, gentlemen, what makes the phenomena?" "Why the nature of the thing?" "Then what makes the nature of the thing?" I do not like the use of the word "law" at all. You remember what Chambers, the author of the *Vestiges of*

Creation, says in summing up one part of his subject,—that there are only two great departments in the universe, that law makes this and that, and law does this and the other. When I read that, I could not help saying, "It is not so." Law does nothing. It is merely a convenient term describing the mode in which power acts. It is power that does everything, and law does nothing. I object to the use of the word even in such a passage as that which I find in the 60th paragraph, where Mr. Pattison says :—

"But though we admit that we do not know the real ultimate nature of substances, yet neither does the objector pretend to this knowledge, and therefore we are at least as much entitled to say that matter obeys laws as the objector is to say that matter is a law to itself."

I do not see that as Christians or Theists we gain anything by saying that, for "law" is in fact a misnomer in such cases. What is law? Simply a collation of the facts. When you use the term law of grammar or language, you mean that such and such a thing is an observed fact in proper speech,—that it is a prevailing usage. But there is no exhibition of power in that; and when you use the term "law" in any sense implying power or action, you are importing a purely false meaning into it. There is one other passage in the 58th paragraph in which the word "unthinkable" occurs. Mr. Pattison says :—

"When the logicians tell us that the Infinite is unknowable, they cannot mean to say that it is unthinkable."

Professor Tyndall makes a great deal of that. He says of the creation of man, and of the statement that God breathed into him the breath of life, that it is unthinkable—that you cannot think it. I ask, "Is it unthinkable?" and I will leave it there. And now will you let me leave the whole subject by drawing attention to two or three points summing up what I have been saying? You know what Professor Tyndall tells us in a brilliant passage about the salt crystals. He says, "Look at them, they are made what they are." Suppose you stood before the pyramids of Egypt and were told that nobody had planned them. But you know that there was an architect and swarms of slaves to carry out his design. So he says with the salt crystals, the unscientific mind can picture to itself swarms of slaves depositing those crystals, but that is not the scientific idea. The scientific idea, forsooth, is that those crystals are self-positing. We get rid of the slaves at once. I will not disagree with the Professor: we all know that they are self-posited; but what I fail to see is how the dismissal of the slaves gets rid of the master. (Cheers.) The slaves were there only because there had been a preceding mind, which had an idea to carry into execution; but when you talk of the self-posited crystals, you no more get rid of the evidence of mind than when you talk of the self-adjusting valves of the steam-engine; in fact, the evidence of mind is all the greater. But when you get to life—look at the

lowest manifestations of vegetable life—you can make motion of heat and electricity, but when you come to vital force, as in a plant, you can do nothing of the kind. Vegetable tissue decomposes carbonic acid as carbonic acid is not to be decomposed in our laboratories. Look at that fact. Every leaf of every weed, or herb, or moss, or lichen, shows that when the first particle of vegetable matter was seen in the world, there had come something which could not be produced by any other means than its own growth and propagation. Professor Huxley says: "I see no break: there is unbroken continuity"; but there was a break, for you come to a time when vegetable tissue was first called into existence, and that vegetable tissue could act upon carbonic acid as nothing else ever could or ever did. Take protoplasm, which Professor Huxley says cannot be made except by contact with antecedent life. You talk of the protogenes of Haeckel, and tell me that they are the first embodiments of the power which we call vitality. Here, then, is the fount of the power which we call vital force, and which is not chemical nor mechanical. From your protogenes to man there is no break, but still there is no such thing *in rerum naturâ* as life in animal or plant except through antecedent life! To the protogenes I say, "You are the first things that lived. Did you inherit your life? Was it handed down to you?" "No," they reply, "or we should not be protogenes." "And yet you are alive?" "Yes." "But there is no such thing as living without protoplasm, and protoplasm does not exist except by connection with antecedent life." (Loud cheers.) Therefore these protogenes are and are not alive, and I leave it to the other side to settle that question.

Rev. Principal SAUMAREZ SMITH, B.D.—I am not going to address you at any length to-night, and indeed it would be unnecessary to make many remarks because of the long and interesting speech which we have just heard from Dr. Wainwright, as a comment on Mr. Pattison's interesting paper. But I should like to add one illustration from a book, which I have lately been perusing, by a German professor—I think a Roman Catholic theological professor—entitled, *The Bible History of Creation and its Relation to the Results of Natural Science.* Now I think the point is a good one to illustrate the subject of a paper on nature's limits. Professor Reusch says, with reference to the assumption made that the beginning of all things was an enormous mass of gas extended through space, — that physical science, taking its results, knows only of four ways in which that presumed first matter could be condensed or consolidated: (1) by external pressure, (2) by the property of gravitation, (3) by chemical attraction, and (4) by a lowering of the temperature; and then he shows that none of these agencies could have produced the required result in the gas itself, except through some force besides matter and outside space. Therefore, you have the argument of the paper, that the limit of nature which you get by these processes, necessarily postulates something outside nature which you

may or may not know,—that there must be some initiative force outside in order to make a beginning: I think that this is an interesting illustration. I have been very much pleased with Mr. Pattison's paper, and with the discussion which has occurred upon it, and I think the great moral of the paper is, that we must remember how all the scientific processes and all scientific knowledge are, to quote an expression used by Professor Virschow in his address to the recent congress of naturalists at Munich, only "piece-work." Let us remember that though the knowledge obtained by scientific men, from year to year, goes a great way; it does not cover the whole space. When we leave the limits of physical science, and scientific research into phenomena, and get into the sphere of philosophy and the mental processes, we have another handle to use; and what I believe these discussions more and more prove is, that you never can get to any valuable truths without taking hold of both the handles, without bringing your philosophy in to the assistance of your physical science, and having the help of your physical science to the framing and modifying of your philosophy. Then, after all is said, there comes the still further question, "Do we know anything more?" and further, as Dr. Wainwright has said, with what we know in revelation, we can go on from our physical research and observation of nature, and from our investigations into consciousness, and so on, to a higher sphere still. Thus it is "by faith we have the knowledge that the worlds or the ages were made by the Word of God, so that we cannot think of the visible as having come into existence out of phenomena," but we must think of it as having come into existence from a Power beyond. Then we know from revelation something more about that Power than that it was merely the First Cause—we know something about Him, the Almighty and Omniscient, "the source of all love as well as of all power." (Cheers.)

Mr. PATTISON.—I am very much obliged to the meeting for the way in which my paper has been discussed. The first speaker objected to my making nature and man two entities. In the passage which he referred to I have not tried to dissociate them, but have simply spoken of man as being surrounded by phenomena,—which it is the fashion to call "environments," the man being one thing and the environments another. It is true that I have used the phrase, "a trick of advocacy," but no one would know better what I meant, or would forgive me for it more heartily, than Professor Tyndall himself, to whom I have applied it. I apply the phrase in reference to one used by Professor Tyndall, "It is now generally admitted." Professor Huxley also errs in the same way, for, after giving us a hypothesis, he sums up and says, "It is the general belief." I speak of that as "a trick of advocacy," which, however, only means the skilful use which an advocate makes of all the points within his reach for the purpose of obtaining the verdict. The third speaker referred to what I have said in my twenty-first paragraph, and used as an argument, but have not, perhaps, expounded with sufficient clearness, in reference to development. If

I can make what I have said intelligible, the argument is fatal to the development or evolutionary theory. Professor Huxley, in his *Genealogy of Animals*, thus defines evolution :—"The mutual interaction, according to definite laws, of the forces possessed by the molecules of which the primitive nebulosity of the universe was composed." I will not stay to ask whence the laws or forces come, but only to say that if in the case supposed, there are molecules which have a mutual interaction according to definite laws, then the stage of progress which that interaction produces must be in all respects and everywhere the same. There would be no room for the variety of structure that we find, and the dissimilarity of form that we see in the whole of creation. If the molecules acted from the beginning, according to definite laws, upon each other, and thereby produced certain effects, then those definite laws must produce the same effects ; and so we should see the products of that work in the same stage all over the world, whereas we really do find the very contrary to be the fact. This is what I meant. Dr. Wainwright complains that I have stated my conclusions too dogmatically at the commencement of my paper. I quite admit the charge. I am lecturing to a philosophical society, but even in a philosophical society it is necessary to sound the *rappel* as it were, and to put forward with as much force as possible the truths which you afterwards prove. This is not a mere teaching paper addressed to a class, it is one in which I have attempted to gain the ear by stating clearly and fully the propositions which I intended to maintain, even at the risk of some reiteration. In the valuable observations of Dr. Wainwright there were many remarks which were connected with the meaning of terms ; and with regard to them I would simply say, that if I had had an opportunity in the time allotted to me of annexing an interpretation clause to my paper, I think we should have found ourselves pretty well agreed. With regard to the point raised about the barriers of instinct, I specially refrained from carrying that any further, though it was an interesting subject to go on with, because I did not wish to burden the paper with an accumulation of mere illustration. I cannot consent to throw overboard that which is, in my view, the very essence of the question, namely, whether the phenomena make the laws, or whether the laws are independent of the phenomena. I concede that it would be better to use the word "rule" than the word "law." We are in the habit of using them almost one for another, but the word "rule" would better express the sense of what we mean in this argument than the word "law." I think I have shown that there are rules and there is law beyond and above phenomena, and, therefore, I do not think it a fact that the phenomena are above the law, which is the contention on the other side. It was well put that philosophy and physical science are two handles which we must work together, and the value of this society is that it does work one handle which the scientists do not touch. As to my authority for the statement about modern opinions concerning geology and uniformitarianism ;

uniformitarianism has been on the decline, and was indeed declining, before the death of Sir Charles Lyell. This theory is not held now even by Professor Prestwich, or any one else, without great modifications, so far as I am aware; and most of the books on geology published nowadays, which have to deal with the present condition of the crust of the earth, speak of things which must have occurred under very different conditions to what the doctrines of uniformitarianism require. I tried to bring this before the society in two lectures, which I have already delivered here, and, therefore, I will not now enter into the matter any further. With regard to biology, I do not refer in my paper to the microscopic bactaria, &c., but to the testimony afforded by Barrandé respecting the *Silurian cephalopods*, which absolutely disproves the doctrine of evolution. In like manner Mr. Davidson, one of the most competent observers in Europe, in regard to the *terebratulæ*,* shows that they disprove evolution. He has given all the matured experience of an accomplished man for a whole life-time, to this very work, and, therefore, he is a competent authority. Then Dr. Carruthers, of the British Museum, our best palæontological botanist, comes to the same conclusion, and so does Mr. Gwyn Jeffreys, the acknowledged chief of conchologists, who was the president of the Biological Section of the British Association at the Plymouth meeting. He shows that the contrary of evolution is taught by the forms of ancient and modern molluscous animals. I need not give any other authorities on this question.

The meeting was then adjourned.

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* See vol. i. pp. 130 and 139.