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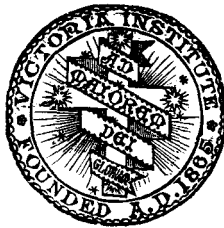
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864TH ORDINARY GENERAL MEETING

HELD AT 12, QUEEN ANNE'S GATE, LONDON, S.W.1, AT 4.30 P.M.
ON MONDAY, MARCH 4TH, 1946.

R. E. D. CLARK, ESQ., M.A., PH.D., IN THE CHAIR.

The Minutes of the previous Meeting were read, confirmed and signed.

The CHAIRMAN then called upon the Rev. Isaac Hartill D.D., LL.D., to read his paper entitled "The Faith of Newton."

The following elections have been made: Arthur J. Constance, Esq., Fellow; Professor J. Frederick Doering, M.A., A.M., Th.M., Ph.D., D. Litt., Fellow; James Hollingworth, Esq., Fellow; Rev. Charles T. Cook, Fellow; Mrs. B. Skinner, Hon. Life Fellow.

THE FAITH OF NEWTON.

By the REV. ISAAC HARTILL, D.D., LL.D.

THE Religious Opinions of a great man, especially of a scientist, and of so great a man as Sir Isaac Newton, cannot fail to be of interest and value. It is well known that Newton devoted the latter years of his life to the study of Theology, a subject in which he had always been deeply interested. John Locke declared Newton to be the most profound theologian of his day. That claim, I think, cannot be allowed. There were theological giants in those days, such men as Goodwin, John Owen, Thomas Fuller, Jeremy Taylor, Edward Calamy, Pearson, Leighton, Tillotson, Stillingfleet, Richard Baxter, Isaac Barrow, Philip Henry and John Bunyan. It was scarcely to be expected that Newton would achieve the same eminence in theological work as he had done in the scientific field. Cases are on record in which men have abandoned one form of activity for another and have been equally successful in both. Sir Walter Scott won fame as a poet, but on the rise of Byron, gave up poetry for fiction, and became as famous as a novelist as he had been as a poet. Although it cannot be claimed for Newton that he was as great a theologian as he was a scientist, he was a much greater theologian than many people think. His theological writings may not seem particularly impressive, but they are characterized by the same great qualities which distinguish his scientific work. There is the same patience in investigation, the

same assiduity, the same intense concentration, the same great learning and acumen. From every point of view Newton was well-qualified for theological work. First of all he was a Christian, a great Christian. Bishop Burnet, who was never lavish in praise, described him as "the whitest soul I ever knew." His fine Christian spirit, his deep humility, his sincerity, his entire freedom from prejudice, his large and tolerant views, all marked him as pre-eminently fitted for theological study. Accustomed as he had been to study Nature as the handiwork of God, he now proceeded in the same humble and reverent spirit to study the Scriptures as the revealed record of God's Will. And he went to work in precisely the same way. Apart from the merits of his theological productions, is there not something grand in the spectacle of a great and distinguished man of science applying to religious questions the same intellectual strength which he had applied, and successfully applied, to so many of the problems of the natural universe? All too often genius has been allied with scepticism, and the union of philosophy with religion, as we have it in Newton, is a refreshing and stimulating example of a combination which was never meant to be dissolved. There was not the slightest inconsistency in turning, as Newton did, from scientific studies to theological. He was the sort of man we want to study religious matters, and to report to us what he finds. The transition from science to theology was not in Newton's case as sudden or abrupt as it seems. All his great discoveries had been made; his reputation as a scientist was firmly established, and it was a mental relief to him to turn from the very abstruse and severe mathematical and astronomical studies to which he had devoted so many years to the more serene study of theology.

Always fascinated by the subject, he had from his youth given a good deal of attention to it. Attempts have been made to throw discredit on the value of Newton's theological work, especially in Chronology, by saying that they were the productions of old age when his intellectual powers had considerably declined. M. Biot, in his anxiety to establish this point, fixes the date of Newton's chief theological writings as between 1712 to 1719, when Newton would be from 70 to 77. M. Biot is wrong as to his dates, but even if he were right, Newton's mind was at that period as clear and powerful as ever. This is sufficiently proved by his ability to attack the most difficult mathematical

problems with success, for it was in the year 1716 that Leibnitz, in a letter to the Abbé Conti, submitted a most abstruse problem for solution which none of the Continental mathematicians were able to solve. Newton received the problem at about five o'clock in the evening when returning home from the Mint and although fatigued with the labours of the day, sat down at once and attacked the problem with complete success. Also his "Four Letters to Richard Bentley," dealing with evidence for the Existence of God—letters which displayed much thought—were written at this later period of his life. In addition to the criticism as to old age, there were writers who delighted in referring to what they termed that "fateful year" 1692. That was the year when Newton suffered from nervous strain due to overwork. He complained of serious loss of appetite and sleep.

In a letter to his friend Samuel Pepys, he admitted that he had not "his former consistency of mind." These symptoms soon became common knowledge, and there were exaggerated rumours as to the state of his mind. There were not wanting those who, in order to disparage the value of Newton's theological writings, deliberately insisted that he had gone out of his mind. His breakdown was by no means so serious as that. All through his illness, which was limited to the period 1642-1643, he carried on a correspondence with Pepys and others of a particularly rational kind without showing the least trace of a disordered mind.

Whatever the value of Newton's theological writings, they are certainly much more extensive than usually imagined. It must be remembered that in addition to his published works, Newton left a vast mass of Manuscripts dealing chiefly with Prophecy, Chronology and Church History. His writings on Prophecy alone, a subject in which he had always been profoundly interested, consist of more than one-and-a-quarter million words. Many of these Papers have not as yet been published. It is difficult to assess them at their true value, but Newton himself always regarded them as the most important of his theological works. He believed that the pursuit of Prophetic knowledge was the noblest use to which the human intellect could be applied.

Also his unpublished MSS. on Chronology, a subject vitally connected with Prophecy, amount to nearly a quarter of a million words. His writings on these two themes, Chronology and Prophecy, show Newton to have been most widely read in

Church History and in Patristic Literature. His first religious publication was entitled "Observations upon the Prophecies of Daniel and the Apocalypse of St. John."

This work is supposed to have been written before 1693, but it was not published until 1732. It is a learned and elaborate attempt to show the fulfilment of the Prophecies. Voltaire, who was greatly interested in Newton, considered that in this work Newton had only said what had been already said by other authors, but that was an under-estimate. Newton filled in many gaps in our knowledge, and all subsequent commentators have been largely indebted to his labours. Newton says, "If I have done anything which may be useful to following writers, I have my design. The folly of interpreters has been to foretell times and things by this Prophecy, as if God designed to make them prophets. By this rashness they have not only exposed themselves, but have brought the Prophecy also into contempt. The design of God when He gave them this and other prophecies of the Old Testament was not to gratify men's curiosity by enabling them to foreknow things, but to the end that after they were fulfilled they might be interpreted by the event, and His Own Providence, not the wisdom and skill of the interpreters, be thus manifested to the world."

Newton has written extensively on Chronology. "The Chronology of Ancient Kingdoms," although not free from mistakes, was one of his most successful efforts. He told Bishop Pearce that he had spent thirty years at intervals in reading over all the authors, or parts of authors, which could furnish him with materials for his "Chronology," and that he had written the work sixteen times with his own hand. Newton's ideas on Chronology would now in the main be regarded as obsolete. They were based on the assumption of accuracy in the older Greek astronomers, an assumption which to-day cannot be allowed. Still, Newton's work does honour to his ingenuity and scholarship, and shows him to have been widely-read in the learning and literature of the ancients.

One of the best known of Newton's Theological writings is his "Historical Account of Two Notable Corruptions of Scripture." The two passages he criticises are I. John 5, 7, and I. Timothy 3, 16, both of which strongly support the Doctrine of the Trinity. As Newton regarded these passages as mistranslations, it was natural that he should be suspected of Unitarianism. The first

passage is : " For there are three that bear record in heaven, the Father, the Son, and the Holy Ghost, and these Three are One." Newton maintained that the words were not contained in a single Greek manuscript earlier than the 14th century, a view endorsed by F. J. Hort and other modern scholars. Nor are the words quoted by a single Greek Father during the whole of the great Trinitarian controversy.

St. Jerome does not appear to have known the words, and Martin Luther omitted the words in the last edition of his " Bible," though they were afterwards restored by his followers. The words were also omitted by Erasmus in his first two editions of the Bible, but were inserted in the edition of 1522. They were discussed by Richard Simon in 1689, and by Richard Bentley in a public Lecture. It is true that there are two manuscripts in Latin in which the words appear, but Newton considered that in translating from the Vulgate, a mistake had been made, or the manuscript had been tampered with. So he argued strongly for the omission of the passage. The second passage which Newton considered to be corrupt, was I. Timothy 3, 16 : " Great is the mystery of godliness : God manifest in the flesh." It is the word used for God to which Newton objected ; he challenged the accuracy of the translation. It is certainly true that the word used here for God does not appear till about the close of the 4th century, and Newton places it at a still later date. It does not necessarily follow that because Newton attacked these particular Passages that he himself was Anti-Trinitarian.

It is difficult to speak of Newton's Creed or Religious Beliefs with absolute certainty. He was, as I have said, a deeply religious man. To overlook that would be to ignore what was deepest in him. Religion was to him of the greatest importance, and its expression was always the result of much careful thought. He was one of those Christians who think and feel deeply, but who say very little. His reserved disposition made it difficult to secure from him a full and clear declaration of his religious belief, or of his religious life, what Methodists would call his " experience." Nor can we secure from his theological writings any great certainty or precision ; they seem to allow of considerable diversity of opinion. His unpublished MSS. throw some additional light upon matters, but not sufficient to clear up certain points in dispute or to justify a definite pronouncement. Deism was very prominent in the 17th century, and many think that

Newton had considerable sympathy with it. He was certainly regarded as unorthodox in his views. It is definitely claimed by some that he held the Unitarian position.

He was undoubtedly greatly interested in the Trinitarian Controversy, and left a number of important MSS. dealing with it. One of these is entitled "Paradoxical Questions concerning the morals and actions of Athanasius and his followers." Newton formulates 16 questions, and to each of them he gives an answer overwhelmingly in favour of the Arians. In another unpublished MSS. entitled "Trinitarianism," he again propounds a number of questions which he does not attempt to answer, but the form of their statement indicates Arianism. Here, for instance, is the first question: "Whether Christ sent His Apostles to preach Metaphysics to the unlearned common people, and to their wives and children?" That is a strong hint at the Athanasian Creed. Newton also wrote a Church History in which he deals at length with the Arian Controversy. In a Common Place Book which he kept and which consists of 40,000 words, he makes a number of observations upon the works of Athanasius. Writing to John Locke, he says that he quite agrees with him that Christ's words, "I and my Father are one" should be interpreted to mean "one in *purpose*, rather than one in personality." All this, together with the fact that he refused to take Holy Orders as required by his Fellowship of Trinity College, looks like a case for his Unitarianism. On the other hand, it is contended that he was a firm believer in the Doctrine of the Trinity as also in all the other doctrines of the Christian Revelation, and that his objection was not to the doctrine of the Trinity itself, but only to the way in which it is formulated by Athanasius, and to the unfair manner in which certain passages of Scripture have been treated and twisted about in order to support the Trinitarian doctrine. Newton's silence, or want of definite committal as to his religious beliefs, might have been influenced by the official position which he held. Unitarians in those times were debarred from all positions of trust, and men were sent to prison for holding such opinions. As Newton was Warden of the Mint, a position of great trust and responsibility, he would certainly have been deprived of his position had it been known that he, the most honoured man in the Kingdom, shared those same beliefs. His religious opinions, on the assumption that he was a Unitarian, are difficult to reconcile with his official position.

There is one other matter to which I ought to refer. It is this : The problem of the reconciliation of Science and Religion did not trouble Newton : he never even faced the problem. There were two reasons for this. First, his Science and his Theology were quite separate things. In "Seven Statements on Religion," one of Newton's unpublished MSS., the first statement is : "That Religion and Philosophy are to be preserved distinct. We are not to introduce Divine Revelations into Philosophy, nor philosophical opinions into religion." Michael Faraday at a later period, and most of the thinkers of Newton's time, held the same view.

So they never even faced the problem of reconciliation. For them, the problem did not even exist, although there were many indications that it soon would appear, and would have to receive attention. The second reason why Newton did not face the problem of reconciliation was that even if such a problem existed, it was not urgent at that time. It did not become really pressing until the growth of the Biological Sciences in the 19th century. It was not until the Evolutionists by representing life and its functions as part of a vast mechanical process, and thus reducing the status of man to that of a cog in a machine, that the problem of reconciliation became urgent. The 17th century had opened with an extraordinary wealth of scientific discovery.

A mass of fundamental work was produced, and the acceptance of observation and experiment as the true method of scientific research, methods by which Newton himself worked. The sciences were becoming more and more differentiated, and the introduction and revelations of the microscope had led to considerable advances in Biology. But all this scientific progress left the theological world almost unmoved. Even the idea of the automatism of animal movements and reactions developed by Descartes, and further extended later in the century, had little or no effect on the position. It was much the same with the work of the chemists. The only two departments of Science which created a stir among the theologians were Physics and Astronomy.

Discoveries in these departments attracted theological attention from the first. It was inevitable that they should do so. The concept of God as the Great Engineer, or to use the term then employed, the Great Artificer, dominated scientific thought

in Newton's time, and continued to do so until the beginning of the 20th century. This view of God seemed to many people to carry with it the mechanistic conception of the Universe, a conception, the validity of which is now challenged and largely discredited. The new physics have created a mental climate unfavourable to a mechanistic interpretation of the Universe. It has encouraged Sir James Jeans and others to think of God as a Great Mathematician rather than as a Great Engineer: "To my mind, the laws which Nature obeys are less suggestive of those which a machine obeys in its motion than of those which a musician obeys in writing a fugue, or a poet in composing a sonnet. The motions of electrons and atoms do not resemble those of the parts of a locomotive so much as those of the dancers in a cotillion." This change in the conception of God and the Universe has been mainly brought about by the revision of the old concepts of Space and Time involved in the Theory of Relativity, and by the statistical laws associated with the Quantum Mechanics. It is satisfactory to know that the leading exponents of these modern views of Space and Time, Einstein and Prof. Planck, strongly repudiate the idea that they involve any break with the notion of universal causation. Newton, by his mechanical conception of the Universe, has been accused of strengthening materialism. To strengthen materialism was the last thing he wished to do. It was said that his discovery of the Law of Gravitation, if it did not banish God completely from the Universe, at least pushed Him to the confines; that it treats God as a kind of engineer who set the world in motion at the beginning of things, and has since been simply a spectator of its working. The Universe is conceived as a complicated piece of mechanism whose inter-acting parts never go wrong.

Substantially, this was the view of the 18th century Deists. So far from being a materialist, Newton cherished a sublime belief in God as the Ultimate Cause of the order of which, in all directions, He had found such satisfactory evidence. Here are the words with which Newton closes the *Principia*: "The Master of the Heavens governs all things, not as being the soul of the world, but as Sovereign of the Universe. A God without Sovereignty, without Providence, and without object in His Works, would be only Destiny or Nature. Now from a blind metaphysical necessity, everywhere and always the same, could arise

no variety, none of that diversity of things according to places and times (which constitute the life and order of the Universe) could only have been produced by the thought and will of a Being who is the Being existing in Himself and necessarily." No wonder that Newton was astonished when Leibnitz, in a letter to the Princess Caroline, insisted that the philosophy of the Principia was subversive of the Christian Religion, and that Newton's God was merely a super-mechanic whose universe could not be kept going without constant repairs. In 1932, a team of Russian scientists visited this country to confer with our own scientists, and among the remarkable papers read was one by Prof. B. Hessen on "The Social and Economic Roots of Newton's Principia." It contained this interesting acknowledgment: "Newton's appeal to the Divine Mind as the highest element, Creator and Prime Motive Power of the Universe, is not in the least accidental, but is the consequence of his conception of the principles of mechanics." The object of the paper was to explain Newton according to the principles of "historical materialism." The effect of it is rather to display the efficiency of a creative mind drawing upon the resources of that invisible world of relationships behind all outward nature.

From what I have said, it is quite clear that Newton was a firm believer in God as the Ultimate Cause of this Universal System. He believed, as did Lord Kelvin, who lies buried by his side in Westminster Abbey, that "Science positively affirms Creative Power." In fact one of Newton's principal purposes in writing the Principia was to establish God's supreme authorship of the Universe. The tremendous flights of Newton's genius which enabled him intuitively to reach such remarkably true conclusions, were based on his profound belief in God. Not only did Newton believe in a personal God, but with equal firmness and humility, he believed in Christianity as a Revelation from God. He always spoke of Christ with great reverence, and although we may not be able to speak very definitely as to his view of Christ's Personality, it is well to remember, especially as there are those who still claim that he was a believer in the Doctrine of the Trinity, that his adverse criticism of the Athanasian Creed might after all only have meant a strong objection to the authoritative use that was made of it, and to the unfair manipulation of Scripture passages which were supposed to endorse it. There are many to-day who in their presentation of

the Trinitarian position come very close to Tri-theism, and Newton's objection might have been against Tri-theism rather than Trinitarianism.

In any case the capture and permanent retention of so great and brilliant an intellect as that of Newton must be regarded as one of the greatest triumphs of Christianity over the intellectual life of man.

DISCUSSION.

Dr. R. E. D. CLARK, the Chairman said: In the name of the VICTORIA INSTITUTE I should like to thank Dr. Hartill for his scholarly and deeply interesting paper on the Faith of Newton, which for clarity and completeness could scarcely be improved upon.

It is a noteworthy fact that interest in Newton never dies with the passing of the years. In part this is, of course, due to the fundamental nature of his discoveries, but in part only. Of equal importance is the fact that his highly imaginative and original mind can never become quite out of date: his suggestions still interest us as they interested his contemporaries.

Here, for instance, are two striking instances of Newton's up-to-dateness. Entropy had never been heard of before the nineteenth century and so we tend to look upon the argument that the universe is unwinding, and so must have once have been wound up by a Creator, as relatively new. But in his *Letters to Bentley* we find that Newton has argued along the same lines hundreds of years ago—for he pointed out that hot bodies and cold bodies exist together in nature, a condition that cannot have existed backwards for ever.*

Then again, there has been much talk in recent years of the principle of indeterminacy in physics. But as Frenkel† has so aptly pointed out, it was Newton who first postulated physical indeterminacy when he ascribed fits of transmission and of reflection to his corpuscles of light.

* See *Hibbert Journal*, 1939, 37, 425.

† J. Frenkel. *Wave Mechanics and Elementary Theory*, O.U.P., 1932, p. 35.

With regard to the Trinitarian question, little need be added to what Dr. Hartill has already said. But perhaps it is worth pointing out that, of all the thousands of papers left by Newton, only a very few bear on the subject. If the volume of his writing has any relation to his interest in the things he wrote about, we must certainly conclude that even if he was an Arian, he had no overmastering passion to disprove the Trinitarian doctrine.

It would be interesting to know Dr. Hartill's views on the influence of the Cambridge neo-Platonists on Newton. Under their influence Newton seems at times to write as if he thought that space was God. Yet, at other times, both his religious faith and his science forced him to think of God as transcendent. Is it possible to say how these two views were related in his mind? Were they contemporaneous?

The Rev. A. W. PAYNE thanked Dr. Hartill for his valuable paper and said he felt that in taking the attitude he did to the two passages respecting the truth of the Trinity 1 John v, 7; 1 Tim. iii, 16; Sir Isaac Newton was emphasizing the authority of Holy Scripture rather than attacking the doctrine of the Trinity. In the Scrivener Greek Testament one usually consults, both passages have the orthodox text. The point of contention in 1 Tim. iii, 16, is of course a very fine distinction between "He was," or "God was" manifest in the flesh, and microscopic investigations have been made as to whether the small line is in the θ (theta), or omitted, which, of course, makes the difference in the reading of the passage. Sir Isaac is frequently described as a Christian, and, as this paper says, always spoke of Christ with great reverence. Though he may have criticized the terms of the Athanasian Creed he must have continually in his Church and public meetings repeated "The Apostles Creed" which is clear enough on this matter. Indeed the very word Christ or *Xpistos* emphasizes this point for it includes the Trinity, the One Who is anointed by the Father, with the Holy Spirit.

The speaker then read a translation from the Latin of the record of Sir Isaac Newton's monument in Westminster Abbey.

WRITTEN COMMUNICATIONS.

Mr. ARTHUR CONSTANCE wrote at length (a part of his communication is reproduced below).

This excellent paper surveys the generally accepted facts regarding Sir Isaac Newton concisely and clearly—it is to be regretted that Newton's life and works are not given much more attention to-day.

But I respectfully suggest that the title of this paper is misleading and inaccurate if intended to imply that Newton's faith was that of a Christian.

Positivism found in him its most loyal and brilliant disciple. His religion was a religion of the intellect, his faith a faith in no personal God, and assuredly not in any Saviour of faulty sinners. If the term "faith" can be applied at all, it was in a system of thought, a hard, lifeless, all-explaining principle: the Analytical Method. That he paid lip-service to Christianity, and became engrossed in the numerical and factual equations of prophecy, does not affect the plain truth that his interest was entirely intellectual.

Sherwood Taylor, in *The Fourfold Vision* (Chapman and Hall 1945) contrasts Newton with Blake, and the contrast is vitally apposite to the paper now under discussion. He says (page 100):

"Now we can see what Blake meant by

. . . *God us keep*

From single vision and Newton's sleep.

For Blake, Newton is the symbol of the mechanical philosophy in which everything is to be explained as *necessarily* occurring as the result of forces operating upon dead matter. Newton, it is true, believed in God and in the soul, but this belief took only a nominal or at least ineffective part in the world-view that constitutes the philosophy called Newtonian. He conceived his absolute time and space as being constituted by God, all pervading and eternal: yet if the idea of God be taken away, the Newtonian philosophy still remains: for the idea of God is not necessary to it and did not survive in it. It is, as Blake says, a *single* vision. Sense is excluded, for the perceptions of man are not regarded as giving a true picture of what they portray. There is in it no artistic or spiritual vision of the universe; but simply the intellectual presentation of science. . . ."

I earnestly commend to the thoughtful attention of the seekers after Divine truth who are considering this highly stimulating and provocative paper, the thought contained in this paragraph of Sherwood Taylor's book. It is a thought which is so relevant, so piercingly appropriate to discussion of *The Faith of Newton* that I beg you neither to ignore it nor to treat it lightly. For if indeed—and the study of Newton's life and works can only deepen and intensify the conviction—if indeed it is possible to omit God entirely from the philosophy called Newtonian, in the sense that Marxian Socialism can use it as a basis for its godless materialism, then how can it be said that Newton's faith was in any sense fundamentally a Christian belief: in fact how can one say that Sir Isaac Newton, for all his contributions to human science, had (in the Biblical sense) any *faith* whatever?

AUTHOR'S REPLY.

I am pleased with the kind reception given to my lecture, and with the favourable and valuable criticisms.

Dr. R. E. D. Clark is undoubtedly right in his assertion of the perennial interest in Newton, and he is also right in attributing this to the fundamental nature of Newton's discoveries. With regard to the Trinitarian Controversy, while I think that the number of papers left on the subject by Newton is probably greater than Dr. Clark has in mind, I am sure that he will agree with me when I say that the intensity or otherwise of a man's interest in a particular theme is not to be measured by the quantity of his literary output. That would be an unreliable standard of measurement in many instances. Dr. Clark asks for my view as to the influence, if any, of the Cambridge Platonists on Newton. In my reply to Mr. Constance, I have referred to the influence on Newton of Henry More, one of the leaders of the Cambridge Platonists, and my reply confirms Dr. Clark's statement that Newton seems at times to write as if he thought that space was God. As Dr. Clark rightly says, both Newton's religious faith and his science forced him to believe in God as Transcendental. But Newton believed equally firmly in the Immanence of God. His difficulty was how to reconcile them, a difficulty rendered all the greater by Newton's habit—a habit of which Faraday is another illustration—of regarding

Religion and Science as completely separate departments. There were many influences at work on Newton all of which are more or less reflected in Newton's views. First, there was the powerful Deistic Movement. Closely associated with that was the newly-created interest in the study of nature, and of the Religion of Nature. The results achieved in the study of nature were becoming apparent. The discoveries of Galileo, Kepler, Harvey, Leibnitz and Newton had shown that the outward world is organized and governed in accordance with uniform law. The inference was natural and inevitable that if God revealed Himself in Nature, He would also reveal Himself in the constitution of man, and that in a religion according to Nature must be sought the principles which should guide human conduct, and the basis of certitude in the knowledge of God. The great advantage of the religion of nature, as it was then understood, was its simplicity as contrasted with the intricacies of revealed theology, as also its universality as compared with the divergent and often contradictory teaching of hostile sects. It commended itself to the people as an unalterable religion, being built upon the eternal and uniform laws of nature.

It was a religion peculiarly fitted to meet the scepticism and the decline of morality which set in with the Restoration of Charles the Second. The Cambridge Platonists who flourished in the latter half of the seventeenth century, proclaimed Reason to have a divine quality. Whichcote believed that there was no incongruity between the grace of God and the use of the reason. Rationality had a divine foundation. "The spirit in man is the candle of the Lord, lighted by God, and lighting man to God." To go against reason was to go against God, for reason was the very voice of Deity. Archbishop Tillotson affirmed that every doctrine before it could be received must be "judged by its accordance with those ideas of the divine character which are implanted in man by nature." With all these influences acting upon him, to which others could be added, it is not surprising that Newton's Articles of Belief are not as traditional and dogmatic as many would like. But in his belief that "Science positively affirms Creative Energy," to use Lord Kelvin's fine phrase, Newton never wavered in the least. It is in this way that Newton gave the true and right direction to Science.

In regard to the Rev. A. W. Payne's remarks I find myself in substantial agreement. There is much to be said for his contention that Newton's rejection or dislike of the Athanasian Creed did not necessarily mean his rejection also of the Apostle's Creed. Newton was a good Greek scholar, and his attack on the "Two Notable Corruptions of Scripture" was made in the interests of accurate translation, and was not intended to invalidate other passages of Scripture.

Mr. Constance is not without some justification for the fault he finds with the title of my Paper. If, as he considers, Newton was entirely destitute of religious faith, it is not surprising that he should regard "The Faith of Newton" as a misleading and inadequate title. I may say that when negotiating for the Lecture, I submitted two titles, the one, "Newton as Theologian," and the other, "The Faith of Newton." I expressed my preference for the first of these, but was informed that the second title was regarded as the better, and I agreed to its adoption. But Newton's Faith in my opinion covered much more ground than Mr. Constance is prepared to admit. In the "Principia" and elsewhere Newton makes it perfectly clear that he not only believed in a First Cause, but also that First Cause to be Personal, a Personal God. This is essentially a Religious conception of the Universe. If as Mr. Constance believes, and rightly so, Newton held a mechanistic view of the world, he only held it unwittingly as it were. He believed that behind the world-mechanism there was the Divine Mechanic, the Great Engineer, the Great Artificer. There was no Godless science or philosophy underlying Newton's conception. In many cases it would be different. The mechanistic conception would be made to rest on a purely materialistic basis. In the eloquent and important extract from Sherwood Taylor given by Mr. Constance, a quotation for which I thank him, urges that as Marxian Socialism can and actually does use Newton's mechanistic conception as the basis of a godless materialism, Newton's Faith cannot have been very pronounced. My reply to that is that Marxian Socialism has no right to make use of Newton in this way. It is unfair to Newton, as it fails to acknowledge his underlying religious conception of the Universe. The fact is that Newton was greatly puzzled with

the questions of Time and Space, especially the latter. His trouble was with "action at a distance." In no machine known to us can one part act on another part some distance away except through some intermediate agency—a system of cogged wheels, or a belt, or a crank, or something of the sort. But the force of gravity appeared to be an example of one body operating on another at a remote distance, and Newton's problem was how to account for this without some intermediary. The idea that space instead of being "an empty void" was occupied by gravitational fields was unknown in Newton's day, or if suspected, was certainly undeveloped. With his strong belief in a Divine Mind ruling throughout the Universe, Newton was forced to regard Absolute Space as the *sensorium* of God, the organ of "tactual conjunction" between the material world and the Divine Mind, a view which he evidently borrowed from the philosophy of Henry More, one of the Cambridge Neo-Platonists. The concept of God as the Great Engineer dominated scientific thought from the time of Newton to the beginning of the twentieth century. The new conceptions of Space and Time involved in the Theory of Relativity, and the statistical laws associated with the Quantum Mechanics have led to a re-assessment of the mechanical conception of the Universe but it must be remembered that Einstein, Prof. Planck and other exponents of these Theories have repudiated in strong terms the idea that they involve any breach with the conception of Universal Causation.