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EDITORIAL

Two articles included in this Number of the Journal, which is slimmer than usual, were originally delivered as addresses during two different meetings of the Institute, held in London. There have been numerous signs that interest in the work of the Victoria Institute is being maintained, both by existing members, as well as by those, in Britain and overseas, who are enquiring about its aims and objects. It is therefore with a sense of responsibility that the Council has been considering ways of increasing the scope of the Institute's influence – not least through the Journal.

Recently in London an entire meeting was given over to the important matter of drug addiction. An elucidation of the chemistry of drugs and its ramifications was given by Professor J. W. Fairbairn, and followed by an examination of the phenomenon of addiction and its moral consequences, by the Rev. John McNicol. There was evidence of a lively interest in the subject by the discussion which followed these two addresses, and the presence of the Press showed that the matter indeed called attention on a much wider scale.

Probably the overriding truth which emerged, apart from the numerous moral and practical issues, was that man, as well as a creature among creatures is also a responsible being, albeit whose responsibility has been injured by the society in which he finds himself, or as one who has been preserved from this kind of

moral calamity. Man's experience of responsible 'self-hood' gives depth and concern to his experience of what *matters* as well as to what *has consequences*, and the drug question has not made it any easier to distinguish the two. Tillich calls this sense of freedom man's essential nature. But in an age when individualism and self-expression are patently weighed in the balances and found wanting, it seems eminently necessary to stress again the essential truth of man's peculiar freedom.

The content of what *matters*, however, is of utmost importance to society as a whole. Man's responsible freedom may perhaps be defined both by the sociality of his nature and by the fact that he must live with others. Even Aristotle held that man is a political animal before he is a private self. But the special claim of Christianity, having its roots in Judaism, is that responsibility which is registered in conscience depends for its full validity and power upon a responsibility woven into the very nature of things. 'Man is part and parcel of the ultimate order' wrote Ferre, 'for he is a creature of the Most High.'

ROBERT E. D. CLARK, M.A., PH.D.

Maxwell's Demon*

Though the demon of physics may seem a strange choice for a paper to the Victoria Institute, no apology is necessary. The present year (1967) marks the centenary of the birth of this strange brain child of James Clerk Maxwell, a man who, as our President recently reminded us, was 'often gifted with prophetic vision'.¹

Maxwell's writings have indeed an astonishingly modern ring about them. We have been reminded of how, in accepting both mathematical and physical models of reality, he foreshadowed complementarity. On the same occasion he also insisted that analogical understanding should be accorded equal status both with understanding dependent upon physical models and also with that derived from mathematical equations. He believed that God as Creator could be conceived in terms of an analogy between the source of our own creative acts and that of the far vaster creativity exhibited in nature. To the objection that such thinking is woolly and unproductive, he would have reflected that this was precisely the status of Faraday's lines of force at a time when they were an object of ridicule amongst the élite of the astronomer mathematicians – yet the stone which the builders rejected became the headstone of the corner.

Today Clerk Maxwell is chiefly remembered as the first to formulate the mathematical theory of electromagnetic propagation of waves, and the first to have laid the foundations of statistical mechanics. But his investigations led to important advances in many other fields also and he is commonly regarded as the greatest physical scientist to have lived between the time

* It is hoped that the substance of this lecture, expanded and fully documented, will appear later in book form.

¹ R. L. F. Boyd, *Faith and Thought*, 1965, 94, 191.

of Newton and our own century. His prevision of the future of physics was such that were he to return to be with us today, he would certainly feel more at home in our scientific world than any of his contemporaries.

Clerk Maxwell was a sincere, unostentatious and deeply Christian man – a saint in the truest sense. From his earliest years to his death his concern was with the welfare of others – from the day when as a boy his mother died of cancer and young James was so glad to know that she would suffer no more pain, to the day when at the early age of 48 he too was called home, suffering in the same way, his only worldly concern being the welfare of his invalided wife. His correspondence with his wife – which consists of deeply devotional comments on the passages in the New Testament which they had both been reading, testify to the thoughts which largely occupied his mind.

Maxwell looked for and found a good many connections between his Christianity and his science. At the devotional level, he made it a matter of earnest prayer that God would aid his understanding of nature – conversely he insisted that the glories of the natural world must be given free scope to enlarge our sense of the wonder of God the Creator.

Maxwell believed that the Second Law of Thermodynamics pointed to a beginning of time – to a Creation in fact. He saw it as one of the lessons of science that, however well and truly we understand a phenomenon, there are always depths below, which we are not even aware of – so that no advance of science can ever drive God out of our thinking.

Again, two or more different concepts could give rise to the same physical results (e.g. the action at a distance of the astronomers – Farady's lines of force) so that theology might easily lie behind reality unnoticed.

Maxwell was deeply interested in 'molecules' (he used the word to cover atoms as well as molecules) which he regarded as relics of the original Creation (today we might read protons, or electrons, for 'molecules'). They were, he said, the only things which have remained unchanged since they came straight from the hand of God. Their spectra indicated that they were highly complex and, with Hershel, he thought of them as 'manufactured articles'. He believed that they could teach us a good deal

about God. In addition, by the constancy of their properties – for they do not improve by natural selection during the course of ages – they teach us that Creation is the bedrock on which we must build our thinking – evolution is by comparison unimportant and trivial.

Perhaps Thomson's vortex theory of atoms explained their non-creatability and indestructability which would necessarily follow in a frictionless fluid. (Yet 'Was it quite frictionless?' he asked. If not, there should be an 'ether drift' which he looked for, but like Michelson and Morley in our own century, failed to find.) But the ether was conjectural, he knew, and he did not wish to tie Christian interpretations to a mere conjecture which might later become outdated.

It is obvious, Maxwell thought, that in creating 'molecules' all alike, God has provided us with divinely-given absolute standards of mass, length and time: he advocated that these should be adopted. Today, after a century, we have so far got only as far as defining length in terms of a wave-length. Maxwell is still too modern for us!

Maxwell reckoned that in a gas the particles move with very varying speeds, so that the gas laws must arise as a result of averaging. He saw at once that the laws of nature were therefore to be divided into two kinds – those that are absolutely true and those that are true only in a statistical sense, like the laws governing births and deaths in a community. Frequently, therefore, no final deterministic pattern emerges when we deal with small quantities of matter. The problem of nature governed by inexorable laws, with no room for God, simply did not arise.

Maxwell's friend, Balfour Stewart, spent many years studying the connection between solar changes, particularly the sunspot cycles, and the positions of the planets in the solar system. This led him to see the importance of relatively small events in nature, the effects of which might be magnified enormously. The vast orb of the sun was greatly affected by the gnat-like planets situated at a great distance away. In nature, said Balfour Stewart, we encounter both stable systems which cannot be greatly altered by acting on them from without, and also systems in which very minute phenomena can be and are

enormously magnified by natural amplifying devices. In discovering nature's laws mankind has confined himself to the first class only, so that his conclusion is not representative of nature as a whole.

Maxwell adopted these views with enthusiasm and, like Balfour Stewart, regarded the brain as an amplifying device with the mind acting as the steersman of the body. By acting on moving micro-particles in a direction at right angles to their motion a controlling action can be exerted, but no physical work is done and no laws of nature are contravened.

As with Faraday and Kelvin, Maxwell's view of nature was highly coloured by theological considerations. It brought no honour to God, he thought, to suppose that the universe consists largely of sheer empty spaces – sheer nothingness. Faraday's picture of a vast web of lines of force, all interconnected together in the great Plan of nature, which brought structure into the universe and dignity to the work of God, was greatly to be preferred. Maxwell's work on electro-magnetic radiation, including his recognition of the nature of light, and his prediction of radio waves, was thus the direct result of his theological preference for a theistic rather than an atheistic picture of nature.

One of Maxwell's most remarkable ideas concerns his 'demon'; to this we now turn. The historical setting is as follows.

Kelvin, then William Thomson, first defined the Second Law of Thermodynamics in 1851, but in doing so was careful to leave a loophole – the law applied to *inanimate* nature only. In effect, the law stated that a perpetual motion machine is not possible in the absence of life – whether it is possible if life is present he left an open question for the time being.

Why did Kelvin mention living matter? The answer is plain. All Kelvin's earlier thought was dominated by the idea that at the beginning of time God had arranged the heat distribution in the earth or sun (and later the universe) in such a way that it could not have been the result of any previous physical state of affairs – an argument the reverse of that which Philop Gosse was to use in his famous work *Omphalos* (1857) in which he urged that all created things must necessarily be created with a false *appearance* of a previous existence.

Kelvin was thus committed to the idea that God, the great Mind, had the power to rearrange the energy share-out among fantastically vast numbers of atoms. But if God, as supreme Mind, could do this, then might not the power to do the same in a limited way be a property of minds in general? In short does the Second Law of Thermodynamics operate in the presence of minds? From his point of view this was a natural enough question to ask and it fully accounts for the fact that in his first formulation of the Law he mentioned the possibility.

Not very long after this, in 1853, we find young Maxwell giving a paper to his fellow undergraduates on the intriguing subject: *Ought the Discovery of a Plurality of Intelligent Creators weaken our Belief in the ultimate First Cause?* His notes for this lecture contain the following words: "The search for such invisible potencies or wisdoms may appear novel and unsanctioned . . . for my part I do not think that any speculations about the personality or intelligence of subordinate agents in creation could ever be perverted into witchcraft or demonology. Why should not the Original Creator have shared the pleasure of His work with His creatures and made the morning stars sing together?"²

From this it is certain that Clerk Maxwell had long harboured the idea that at the Creation God might first have created a vast number of subordinate beings, each allotted his small assignment of work in the Great Plan!

As the years passed, Kelvin's idea that life might in some way be able to circumvent the Second Law occasioned a good deal of discussion. Kelvin himself came to the conclusion that this was most improbable, but not all were convinced. Only after Maxwell's death was the matter finally solved at the crude level, in that animals and men placed in calorimeters were shown to generate heat which corresponded precisely to the food metabolised: they were *not* perpetual motion machines! Nevertheless, the notion that God might act directly on the microscopic physical world, and if God why not lesser minds made in His image, remained in the air.

² Campbell and Garnett's *Life*, 1884 ed., p. 339.

At the end of 1867 Maxwell thought of his 'demon' – he described it first on a post card which he sent to his friend P. G. Tait at Edinburgh. Unfortunately this card cannot be found; Tate's reply is all we have – and it is evident that he was not pleased: 'I object to your infinitely sharp individual that he *lets his gases mix*, and so spoils the theorem. But let him wait long enough to catch a quick one from the colder medium and a slow one from the hotter which are moving in the same line so as to impinge centrally when he moves the slide. How many Darwinian ages will that require? And, when he has caught these two, won't he have to wait longer for a repetition? Good'.³

From this it would appear that Maxwell had imagined two boxes filled with air, and separated by a partition in which there was a small hole. The hole was supplied with a little trapdoor and an imaginary spirit or intelligence sat at the hole. When he saw an extra fast molecule moving towards him in one of the compartments, he allowed it to pass through the hole into the opposite compartment. By repeating the performance he was able to collect the hot molecules in one box so making the air which it contained hotter, this being at the expense of the other box which became colder. Tait seems to be complaining that the pressure will rise in one box and fall in the other, so that when the trapdoor is opened the high pressure gas will tend to surge through. He suggests that it would be better if the intelligence was given more work to do – let him allow the molecules to pass in *both* directions – the slow in one direction and the fast in the other, in such a way that the pressures are kept equal. This is the form that Maxwell finally adopted, which first made its début in print in 1871 in the first edition of Maxwell's *Theory of Heat* (p. 308): 'But if we can conceive of a being whose faculties are so sharpened that he can follow every molecule in its course, such a being whose attributes are still as essentially finite as our own would be able to do what is at present impossible to us.'

And so on as before.

³ Letter to Tate, Dec. 12th. University Library, Cambridge, MS Add 7655/1a, 5.

When Kelvin heard of the idea he was vastly amused. His first reaction was to call the 'being whose faculties are so sharpened . . .' a *demon*. He was a little apologetic about this and explained to at least one audience that he had derived the word from the *Greek* and that no connection with the powers of darkness was intended! The name stuck ever after. 'Who gave them this name?' asks Maxwell on a piece of paper in the Cavendish archives (probably notes for a lecture) and answers, 'Thomson'.

The demon proved exactly what Thomson wanted to add fun and interest to his lectures. For ten years he continued to amuse audiences with the antics of the little creatures – and sometimes newspapers printed *columns* of the stuff!

Kelvin imagined, wrongly as we now think, that the direction of time is connected with the directions of the movements of molecules. If all the molecules in the universe were to move in the reverse direction, then events would move backwards, time would be reversed!

His favourite concept was that of the demon armed with an object like a cricket bat. If he holds this up in front of an oncoming molecule, the direction of motion of the latter will be reversed. There was little which armies of weaponed demons could not accomplish. Populate your universe with them and, at the word – Go! – time will begin to go backwards – the earth and sun will get hotter, old men will get younger, become children, shrink and return to their mothers' wombs.

With smaller demon armies, distributed as thought fit, the strangest things might happen. The water at the bottom of the waterfall gets colder and with the heat it has lost it pushes itself up the cliff face to the top of the hill once more; rocks collect themselves from river beds and rise up to the mountains whence they had fallen; warm water divides itself up into the hot and cold water from which it has been prepared by mixing. But Kelvin was a little apprehensive lest the Cliffords, Huxleys and Tyndalls of the day would think that he was introducing theology unawares! So he is most insistent that the demon is intended to illustrate the statistical nature of the laws of heat and that it has no other function whatsoever.

Maxwell seems to have been greatly amused by these lectures

of Kelvin. What a dreadful lot of arithmetic the little fellows would have to do, he reflected, in order to keep formation after they had once used their bats! After reversing the direction of motion of a molecule, a demon-plus-bat would have gained twice the momentum of the reversed molecule and would be swept right out of line. To keep in formation he must arrange for exact momentum compensation from the opposite direction!

Unlike Thomson, Maxwell does not say that the *only* purpose of the demon is to illustrate the statistical nature of the gas laws. He says, instead, that this is its *chief* purpose – which suggests that he is entertaining other ideas as indeed we have suggested.

It may, of course, seem highly absurd to suppose that Maxwell would ever have invented so crude and silly a model of creation, as if it could throw any light on how God made the universe! It is, however, typical of his genius that this is the kind of way he *did* think. He experienced great difficulty in fixing his mind on a topic on which he sought illumination, and could only do so by inventing some kind of model, however crude. No model could be more crude or far-fetched than that of space filled with rotating cylinders squeezing against one another (to correspond to lines of force of magnetic field), but prevented from rubbing by the presence of little spheres like those used in ball-races (to represent electricity) – yet it was this astonishing ‘model’ which led him to his greatest achievement – the prediction of wireless waves, the very velocity of which he was able to calculate correctly. He used models freely, however far-fetched, but he did not make the mistake of confusing his models with reality. When he had worked a problem out, he would let his model fall away like the scaffolding of a building.

We may think then of Maxwell’s demon as in some way the model of a unit mind, making unit choices – to open or not to open his trapdoor. Given an idea, an intention, mind could accomplish its desire in the physical world – for the movement of a trapdoor requires, in principle, the expenditure of no energy. And a vast number of such minds, operating in unison, could intervene in the statistical laws of nature. In this way, perhaps, though very dimly, one could see how God might intervene in nature. But the picture was crude and Maxwell rightly left it in its whimsical, half serious form. From the nature

of the case there was no concrete evidence to which appeal might be made.

But the great ideas of science, the foundations on which we build today, were often formulated by theological considerations. What then, is the importance of the demon?

Owing to his early death, preceded by the building of the Cavendish Laboratory and the editing of the MSS of Henry Cavendish at the request of the Earl of Devonshire, Chancellor of the University of Cambridge, who had financed the laboratory, there were many ideas which Maxwell had no opportunity to develop. Had he been spared, he would probably have noticed, sooner or later, what Szilard⁴ pointed out in 1929. The demon, in effect, takes information and converts it into negentropy (the opposite of entropy), in such a way that there is a point-to-point correspondence between information and entropy loss. This fascinating idea, which makes it possible to apply thermodynamic principles to information, was developed later by Shannon and is the cornerstone of modern communication theory. It is evident that Maxwell laid the foundation of this important branch of knowledge which, like so much else in science, owes its origin more or less directly to theological considerations. Though the idea seemed so foolish it too, like Faraday's lines of force, has become the headstone of a corner.

⁴ L. Szilard, *Zeit. f. Physik.*, 1929, **53**, 840.

D. GARETH JONES, B.SC., PH.D.

Some Byways of Creation

The thesis of my paper can be put quite simply – the dilemma of Christianity is nothing less than the dilemma of creation. While the problems on both sides have altered dramatically over the centuries, the importance of creation as a determinative factor in the formulation of Christian world-views has remained. This is as true today as at any time in the past. I have mentioned the *dilemma* of both because, certainly since the Reformation, radical alterations in Christian thinking have accompanied large-scale modifications of the creation concept. The uneasiness and bewilderment of much present-day theology is an eloquent testimony to this two-fold dilemma.

If the concept of creation is of such importance for the rest of Christian doctrine, a number of questions must be asked. Why have views on the nature and content of creation changed? What part has been played in this movement by science and philosophy? Has the movement been inexorably away from a biblical view? Indeed what do we mean by a biblical view of creation? Is this a legitimate way of speaking, and if it is, to what extent – if any – is such a view determined by contemporary scientific concepts? And then finally, where do we stand today on this question?

Clearly, on such a vast topic I will have to limit myself to one particular approach to the subject. What I intend to do is to analyse the aims and influence of certain biologically-orientated exponents of pre-Darwinian natural theology. In doing this I will trace the ways in which these approaches prepared the ground for the conflict between natural science and religion, with the consequent demise by Darwin of much natural theology, and unfortunately in the eyes of many of Christianity as a whole.

It might be useful to start with a brief glance at the present situation. I would suggest that, on both the humanist and

religious fronts, a dominant theme is: *the dispensability of God*. At the best the idea of God is outmoded and unnecessary, while at the worst He is dead. Whatever the exact expression used, however, the reason for coming to the conclusion is the same. Modern science, particularly in the form of evolution, has made the hypothesis of God untenable. There is now neither need nor room for the supernatural. Why? Because the earth, together with all the animals and plants that inhabit it, was not created but evolved.¹ As a result man can now dispense with the childish model of creation.² From here it is but a short step to the 'death of God' theologians, who maintain that the contemporary Christian must take his culture seriously. As, in their view, this is a post-Christian culture, a culture for which God is dead,³ and as the Christian faith should be interpreted in a manner compatible with the empirical temper of modern culture,⁴ God is indeed dead theologically as well as culturally. The difference between this position and that of the exponents of 'religionless Christianity' would appear to lie in their interpretation of the secular, because here again it is the secular life, as opposed to the religious, which is of overriding importance.⁵ In this case, however, the *idea* of God is retained, at the expense of a drastic revision of His *image*.

The importance of this analysis for our purpose lies in the underlying assumption that modern science has, or at least should, force us to revise our concept of God. We are told that a personal God was a useful model for an age which compared living things with man-made machines, and which pictured the world in static, mechanical terms. With the passing of such thought-forms, the relevance of the god-hypothesis has disappeared, and man is left to construct more suitable hypotheses for a dynamic, indeterminate and naturalistic universe.

What is clear from this is that the picture of God which is being discarded is one which is closely linked to a now outmoded view of the universe. An integral part of this picture of

¹ J. Huxley, *Essays of a Humanist* (Penguin), 1966, pp. 82-3.

² J. Z. Young, *Doubt and Certainty in Science* (Galaxy), 1960, p. 147.

³ J. B. Cobb, quoted by T. W. Ogletree, *Is God Dead?* (S.C.M.), 1966, p. 18.

⁴ T. W. Ogletree, *ibid.*, p. 40.

⁵ L. Morris, *The Abolition of Religion* (I.U.F.), 1964, p. 49.

God is, or perhaps I should say was, His activity as creator. A machine must have a beginning; in the case of the universe-machine this was God. Furthermore, a machine must have a designer, and so with the universe this was again God. But as the universe is no longer a machine there is no longer place for a creator or designer. Hence, no God; or if one has religious presuppositions it may allow for a radically different sort of a God.

I have no hesitation in agreeing with this argument. Such a god is dead. Modern man must live without a god of this nature. And yet this god is taken as representing the Christian God by many people, who by discarding this image of god think they are discarding Christianity. What has gone wrong? Why all this tragic confusion?

The answer I think lies *in large part* at the door of much natural theology – especially that of the early nineteenth century. In the analysis which follows I am generalizing, and I am not suggesting that *all* scientists fall within the area of my criticisms. Many evangelicals particularly would be exempt. However, the influence of these exceptions was not nearly so great as that of the main stream of natural theology with which I am concerned here.

After the natural theology of Greek philosophy, with its later expression in St. Thomas Aquinas' five proofs of the existence of God, it was summarily dispensed with by Luther and Calvin, both of whom denied the power of unregenerate reason to rise unassisted to a knowledge of God and His attributes.⁶ This meant that, although the Reformers and their followers encouraged the scientific study of nature, the Calvinistic worldview especially proving conducive to its study, natural theology with its logical deduction from innate ideas was distrusted.⁷

This disregard for natural theology was continued by the Puritans, but as the seventeenth century wore on greater emphasis was laid on a rational approach to nature. Basically, however, to men such as Boyle, Newton and Addison, science

⁶ J. C. Greene, *Darwin and the Modern World View* (Mentor), 1963, pp. 39–40.

⁷ R. Hooykaas, 'Science and Reformation', *The Evolution of Science* (Mentor), 1963, p. 283.

was a religious task; it was 'the disclosure of the admirable workmanship which God displayed in the universe'.⁸ These men were themselves professing Christians, and as they approached the world around them they were filled with awe and wonder at the majesty and glory of God. They did not need nature to demonstrate to them the *existence* of God. They knew this from biblical revelation. What they saw in nature of God's handiwork confirmed what they already knew from *outside* nature.

But not only did they recognize God's actions in nature in a *general* way, they saw His purposes and design in even the most *detailed* events. In the construction of the eye, the rotation of the earth, the inclination of its axis, the proportions of land and sea and in many other things, they found a pattern of divine benevolence.⁹ It was Boyle who, long before Paley, used the analogy of a clock in arguing for the existence of a designer. It was then against the background of the Newtonian world-view, in which the world was regarded as an intricate machine following unchangeable and precise laws, that the argument from design was first put forward with apparent scientific backing.

Had it remained thus, as a *subsidiary* argument in favour of the existence of God, it would probably have gained little notoriety and in time would have become a historical curiosity. Unfortunately, in the scientific climate of the day, with powerful scientific backing for the idea and with the increasing importance of reason in religious things, the possibility of approaching God through the intellect alone was becoming accepted. The door had been opened for dispensing with revelation. What was to become important was God as creator, as opposed to God as redeemer.

As an illustration of a possible end-result of this process I will briefly mention the Deists of the eighteenth century, although I am not principally concerned with them here. For them, God the creator replaced completely God the redeemer. Having

⁸ R. Boyle, quoted by I. G. Barbour, *Issues in Science and Religion* (S.C.M.), 1966, p. 37.

⁹ I. G. Barbour, *ibid*, pp. 38-9.

created the universe, He had then vacated it. Natural theology became a substitute for revelation, so much so that Bishop Butler attempted to vindicate revelation by its analogy to natural theology.¹⁰ A cosmic designer with no care for the present world is no god at all, and such was the plight of God in the deistic system which in the end completely dispensed with Him. With this the Deists became vociferously anti-Christian, Christianity to them failing to be a religion of reason.

It may be instructive to note the general similarity between the final Deist rejection of God and the rejection, or radical modification, of the idea of God today. In both cases the knowledge of God to be gained from revelation is of little importance compared with the knowledge obtainable by reason. What is more, the rational approach stems from what is assumed to be the scientific position of the day – in one instance a mechanical view of nature and in the other an evolutionary view of nature. However, both have transformed a general scientific hypothesis into an all-embracing materialistic world-view. Lacking the knowledge obtainable by revelation, and hence starting from a non-Christian set of presuppositions, this transformation is inevitable.

This brings me to what was undoubtedly the cornerstone of pre-Darwinian natural theology – the argument from design. I will consider this with particular reference to Paley, who as we have seen did not originate this argument, but in whose hands it developed into a full-scale *apologetic* for Christianity, with *social* inferences drawn from nature.¹¹

By the time of Paley's writing his 'Natural Theology' in 1802 the process by which natural theology had displaced revelation even in supposedly Christian circles was complete. Without revelation, God had to be known by way of natural theology, and so it was that the heavens no longer declared the glory of God to the eyes of faith. Instead, the heavens were used to *argue* for the wisdom of a creator.¹² Natural theology had become the heart of the Christian apologetic. Without it Christianity would

¹⁰ I. G. Barbour, *Issues in Science and Religion* (S.C.M.), p. 61.

¹¹ C. C. Gillespie, *Genesis and Geology* (Harper), 1959, p. 35.

¹² J. Dillenberger, *Protestant Thought and Natural Science* (Collins), 1961, p. 153.

collapse. The whole of Christianity rested upon God as creator of the universe, and He was known to be creator *solely* because of the evidences of the design and harmony which people recognized in nature. Remove design and purpose from the universe and you remove God as creator, and remove God as creator and the foundation of Christianity has gone.

To express it in another way: 'the proof of the existence of God was based on what science had accomplished, and the proof of His continued activity on what it had not'.¹³ Inevitably therefore as the sphere of science expanded, that of theology receded. The dependence of natural theology on contemporary science was its downfall. This should have been obvious even within the Newtonian world-view, but when this world-view itself was replaced the results were catastrophic. Up to the time of Paley empirical evidence from science had always led *towards* God, to the advantage of Christianity. Under a different world-view it might lead *away* from God, or at least in an irrelevant direction.¹⁴ The natural theologians failed to appreciate that science could be a two-edged sword.

Perhaps the key to Paley's thought is *expediency*,¹⁵ or in more graphic terms it, like eighteenth century natural theology, can be described as 'Cosmic Toryism'.¹⁶ Whatever is, is right. The universe is complete and perfect, the *status quo* being God's intention. Consequently, in order to find out the will of God, one finds out what works. If it works, it must be the will of God. The chief consequence of this viewpoint was seen in the approach of people, such as Paley, to the *social* issues of their day. As one might expect they accepted the *status quo* in the social arena, and so Chalmers in one of the Bridgewater Treatises argued that a poor law would be contrary to the law of nature, while the fact that the means of subsistence were insufficient to sustain the population demonstrated the benevolence of God in that it impressed upon man the necessity and

¹³ Gillespie, *op. cit.*, p. 220.

¹⁴ *Ibid.*, p. 223.

¹⁵ *Ibid.*, p. 36.

¹⁶ B. Willey, *Eighteenth-Century Background* (Chatto and Windus), 1940, chapter 3.

virtue of prudence, industry, self-denial, thrift and forbearance.¹⁷

One of the most crucial points in the argument from design was that the world had been created in its *present* form. It left no room at all for change. This of course is implicit in the last point – if the universe as it stands is perfect, then any other form of the universe would be imperfect. So vital was this point to the argument that the existence of apparent exceptions to the perfect harmony, in the form of catastrophies, pain and evil in general, were explained away by saying that overall harmony outweighs occasional anomalies, or that God has higher purposes than we can conceive.¹⁸ Development, by definition, was excluded. What mattered was the constitution of things, and the construction of nature. As long as it mirrored a static scientific world-view it was safe, but as soon as science took on a dynamic appearance, it was lost. And the first science to be concerned with the *history* of nature rather than its *order* was geology.¹⁹

The natural theologians lacked any sense of *historicism*, that is, change as an integral part of their world outlook rather than change as an isolated and occasional phenomenon. Richardson²⁰ has gone so far as to say that: ‘the real challenge to the nineteenth century revolution in human thinking lay not in the realm of natural science but in the realm of history’. Although he was here speaking about the application of historical methods of biblical criticism, I believe the statement is true in a much broader sense. God’s creativity had been exalted at the expense of His *providential* care of the world. Furthermore, merely to account for the *balanced* condition of nature is inadequate when the time factor also has to be taken into account. Now, the way in which nature is *governed* has taken on importance. At this point the argument from design became outmoded and inadequate.

The stage is now set for the appearance of Darwin. The main thrust of the Christian apologetic, or perhaps I should say of what passed as a Christian apologetic, was centred upon the

¹⁷ Gillespie, *op. cit.*, pp. 215–216.

¹⁸ Barbour, *op. cit.*, p. 39.

¹⁹ Gillespie, *op. cit.*, p. 39.

²⁰ A. Richardson, *The Bible in the Age of Science* (S.C.M.), 1961, p. 49.

argument from design, which in its turn was viable only so long as the science underlying it had a static outlook. Darwin, aided by such forerunners as Hutton, Lyell, Lamarek and Chambers, provided the new scientific atmosphere which in itself was sufficient to topple the precarious superstructure of natural theology. The tragedy lay in the fact that to the public at large it appeared as the deathblow to the creative activity of God, to God Himself and to Christianity as a whole. The hypothesis of design, and in its wake God the Designer, was replaced by the hypothesis of chance, and in its wake atheism. This may be an oversimplification of the situation, but it does emphasize the radical reversal which took place in the first half of the nineteenth century, and which is still very much with us today.

What were the essential principles of Darwinism? Having observed that all individuals and species vary slightly, and that in all cases where there is a tendency to overpopulation there must be a struggle for existence, he postulated that under these circumstances favourable variations would tend to be preserved and unfavourable ones to be destroyed. This is the essence of his theory of natural selection, in which we can recognize a number of ideas. The variations are *random* and are inherited, more young organisms are born than can survive to parenthood, so that the individuals with variations conferring upon them an advantage in the competition for existence will live longer and have more progeny. Over a long period of time this will result in the natural selection of such variations, the individuals lacking these variations being less successful and finally being eliminated. In this way the species will be gradually altered.

The subsequent modifications and extensions of Darwinism into the present-day 'synthetic' theory of evolution, do not affect the relevance for us of the conflict between Darwin and his religious opponents.

Evolutionary changes are explained purely in terms of natural forces and not in terms of God. The natural forces act upon chance variations and not upon predetermined and directed variations. As a result, there is no goal in view. Man is an incidental product of these processes, rather than being the one for whom the rest of the universe was harmoniously designed.

The contrast between the pre-evolutionary view and the evolutionary view could not have been greater. The two systems were diametrically opposed. However, on one point they agreed. Both incorporated a mixture of science and philosophy and both set out to be total explanations of the world. Whatever may be the status of the underlying science in such systems, they are in the end philosophical constructions. The one had a bias towards the religious while the other had a bias towards the materialistic. This is not to say though that the one was Christian while the other was (and is) atheistic.

The point I am trying to make is that the religion-science conflict was based to a large extent on the fear of the religious exponents of natural theology that if God's role as an immediate adjuster of the material world was undermined, He would also be displaced as a governor of its inhabitants.²¹ This fear was justified, but as the roles they assigned to God were derived from a philosophical assessment of a particular scientific formulation their position was not a strong one.

If the conflict then was caused by the head-on clash of two philosophical systems, were there any other contributory factors?

Where, for instance, did the biblical faith stand in relation to both natural theology and evolution?

There can be little doubt that the prevalence of a pre-evolutionary cosmology, which in very general terms favoured Christianity, had lulled Christians into a sense of complacency with regard to scientific issues. Until the end of the eighteenth century, natural science had not challenged a literal acceptance of the Genesis account of creation, any storms from palaeontology being weathered by catastrophism. The evolutionary forerunners of Darwin could not be ignored, but for various reasons their influence was limited and certainly exerted little effect on the interpretation of Scripture. With the advent of Darwin, therefore, most evangelicals felt that the Bible itself was being attacked. One of the foremost evangelicals to study the issue deeply and to write about it at length was Charles Hodge. While allowing that 'science has in many things taught the

²¹ Gillespie, *op. cit.*, p. 227.

Church how to understand the Scriptures',²² and while placing his reliance upon the Bible rather than upon any dispensable cosmology, he rejected Darwinism because of the atheistic implication inherent in the denial of design. He could not disengage any Darwinian hypothesis from a direct threat to a total Christian view.²³

In a strict sense, I do not think the Bible was being challenged, but because of the complex interaction of biblical concepts, science and philosophy, many people, on all sides thought that this was so. What was particularly unfortunate was the similar terminology of biblical doctrines and natural theology. Hence both were concerned with God as creator of all, and yet the *content* of the term differed for the two schools of thought. In the biblical sense God is the One who has brought all things into being, out of nothing, and for His own glory. It is He, also, who upholds and sustains that which He has so created, and it is He who is responsible for the eternal destiny of mankind. The exact manner in which He created and upholds we are not told. By contrast the God of natural theology was the first cause, the divine architect, or the divine clockmaker. His concern with His creation was minimal. This is not creation in the biblical sense; it is nothing more than pointless mechanism.

Conversely, from the evolutionistic stand-point, ideas stating that the random features of evolution are incompatible with plan or purpose, and that despite this organic evolution exhibits progress,²⁴ cannot be substantiated from scientific investigation. They are philosophical speculations.

The challenge of the controversy should come to us in the form of driving us back repeatedly to the scriptures. What do they lead us to expect of God as creator? What details, if any, of the manner of creation do they give us? What place should purpose and design occupy in a biblically-orientated view of nature? We can take none of these answers for granted. We may not get full answers from the scriptures and if not, we should

²² C. Hodge, *Systematic Theology* (Scribner), 1872, I, p. 171.

²³ Dillenberger, *op. cit.*, p. 244.

²⁴ G. E. Barnes, 'The concepts of randomness and progress in evolution', *Faith and Thought*, 1958, 90, p. 189.

tread warily that we do not try and impose our own answers upon the Bible, and then trade this belief as though it were indeed biblical.

This brings me to the place of the creation concept today. We cannot escape from the conclusion that we are living in a culture dominated by evolutionism, which in its turn is a hindrance rather than a help to Christianity. This has led many Christians to attempt various kinds of syntheses between their view of Christianity and evolutionary thinking. If you like, this is the present-day version of natural theology. Examples of such attempts on the scientific side are the 'creative evolution' of Bergson, the 'emergent evolution' of Lloyd Morgan, Smuts's 'holism and evolution' and now Teilhard de Chardin's 'convergent evolution'. In each case the religious is viewed in terms of the evolutionary, and is made dependent upon the evolutionary. In addition to these, all forms of theistic evolution incorporate extensive evolutionary thinking, which is interpreted in religious terms derived from outside evolution.

These attempts at synthesis are based on the presupposition that Christianity must be interpreted, if only in part, in terms of the prevailing scientific cosmology. At the other end of the scale are those who uphold the literal interpretation of the early chapters of Genesis, believing that such an interpretation is the only faithful one and that there is no scientific (as opposed to philosophical) evidence for change above the species level. Also at this end of the scale, although for different reasons, are the neo-orthodox, under the leadership of Karl Barth. This school completely separates scientific and religious questions, so that the doctrine of creation has nothing whatever to do with temporal origins. Rather, it is an affirmation concerning the fundamental relation between God and the world; it is not an event. Barth's questioning of evolutionary modes of thought was not a questioning of the theory of organic evolution, but whether the concepts of evolutionary biology were adequate or appropriate to express the Christian view of reality.²⁵ While rejecting the historical nature of the first chapters of Genesis, Barth's contention was that there are important dimensions of

²⁵ Greene, *op. cit.*, p. 51.

reality that are inaccessible to science and cannot be expressed adequately in the forms of logical discourse.²⁶ Science for its part is given *complete* freedom of expression.

Between these extremes there is I believe a third way – I reject the interpretation of Christianity and creation in terms of the prevailing scientific cosmology, for the same reasons as I have rejected the natural theology of the seventeenth to nineteenth centuries. All such systems contain the seeds of their own downfall, or if they do attempt to adapt themselves to the changing scientific atmosphere they will be subject to continual reinterpretation. While such reinterpretation is part and parcel of the scientific enterprise, it can only be damaging to a religious system.

On the other hand the complete divorce of science and religion allows for no interchange between the spheres. This I consider is artificial as it ignores both the influence which biblical thinking has had upon the development of science, and the ways in which biblical interpretation has been modified by science. An example of the first interaction is the dynamic implicit in the doctrine of creation to the effect that the details of nature can be known only by observing them. In other words the universe is as it is because this is the way in which God has created it. It is the expression of God's will, and not the logical outcome of arbitrary first principles. Nature can be understood only by empirical investigation, and it was the acceptance of this essentially Christian viewpoint – as opposed to the deductive reasoning of Greek philosophy – which made possible the rise of modern science. As for the second interaction, one example from the early chapters of Genesis will suffice. The insistence of evolutionary geology that long periods of time were required for the development of living things as we see them today, has forced students of the Bible to reconsider the meaning of the 'days' in Genesis 1. and of the chronological sequences in Genesis 5. This does not mean that the days have to be interpreted as long periods of time, but it does mean that their interpretation and their part in the scheme of creation have undergone serious reconsideration.

²⁶ Greene, *op. cit.*, p. 52.

As a sequence to this, I think a literal interpretation of every statement in Genesis concerning the creation is open to serious doubt. Principally this is not because it conflicts with the natural science of today. I have already rejected interpreting Christian things in terms of a scientific cosmology. However, I believe we have to take seriously what appear to be scientific facts, distinguishing as this point what we believe to be factual and what is clearly philosophical. On this basis we can say that the earth would appear to be aged in terms of millions of years rather than thousands of years and that change characterizes both it and its inhabitants. The extent of this change is still I believe an open question. That God has brought all of this into being there can be no doubt from biblical revelation. That it is God who actively upholds this system there can be no doubt. That God is working out His purposes in and through it there can be no question. However, the detailed way in which He acts in these processes is a matter of speculation, while the fact that these processes can be described and to a certain extent explained in naturalistic terms in no way affects their *reality*. Our understanding of their *external* details comes mainly through scientific investigation, whereas our appreciation of their *internal* significance is a matter of revelation and faith. But I would stress again that these two aspects of the problem are not separated into watertight compartments.

We find ourselves in a world in which the *secular*, defined as the sphere which is intelligible for man, is rapidly eroding the *sacred*, defined as the realm lying outside man's understanding and control.²⁷ As the secular is determined by scientific knowledge, its sphere of control will undoubtedly continue to increase in the foreseeable future, and as secularization has of recent years been accompanied by the process of dechristianization,²⁸ the outlook for Christianity might look bleak. However, to quote Charles Davis, it can be argued that: 'Christianity itself with its exalted view of the sacred, with its insistence on the true transcendence of the sacred, . . . has been the fundamental cause of the secularization of the West'. It follows that:

²⁷ C. Davis, *God's Grace in History* (Fontana), 1966, pp. 14-15.

²⁸ *Ibid.*, p. 11.

'modern secularization . . . may be regarded as a purification of our concept of the sacred'.²⁹

In this I see our hope for the future. Christianity can only survive and flourish when it is true to itself, and this means when it is true to God's revelation of Himself and His purposes as given in the Bible. This basis is the stimulus to a true religion and a free science. What we must seek is an organic unity between biblical faith and natural science. In the words of Hooykaas: 'What the Bible urges upon man is a complete transformation in his relations to God and his fellow-creatures, and to the world which God has made.'³⁰ Only by a faithful reverence to God's word in life and thought, and by a diligent application of the principles of science in investigating the world around us, can we truly worship God as our Creator, Redeemer and Lord.

²⁹ C. Davis, *God's Grace in History* (Fontana), 1966.

³⁰ R. Hooykaas, *Christian Faith and the Freedom of Science* (Tyndale Press), 1957, p. 14.

DAVID J. ELLIS, B.D.

Biblical Apocalyptic and Prophecy

There are relatively few serious readers of the Bible today who do not become aware, at some point, of an unsatisfactory alternative with which they are confronted by the apparent results of literary criticism on one hand, and a subjective exposition of the Scriptures on the other. It has, however, been laid down by a number of scholars that type-analysis, especially in Old Testament study,¹ has checked both extremes to some extent. For the clearer understanding of the message of the Bible it is evidently necessary to identify the various forms of literature which it contains, and to come to some conclusions regarding the situations in which they were originally written.

But caution, however, must be exercised with type-analysis or *Gattungsforschung*. We need to be reminded that our classification of the various types of biblical literature remain *ours*, and do not generally reflect any forms of which the original writers were necessarily conscious. The writers of the Bible did, of course, understand the main literary divisions of which we are accustomed to speak today, such as prose and poetry. It may be said, moreover, that biblical authors were more aware of contributing to particular traditions, against which technical names, that are often disputed in modern times, have been given.

Two literary categories that have intrigued students of the Bible are prophecy and apocalyptic. Specific mention of such a category is made within the Bible in Rev. i. 1, where the writer calls his work an apocalypsis. It would seem that the term is used by him in no technical way, though it does, in fact, describe the literary genre of the book in common with a greater body of mainly Jewish literature. This word has become the title of the book, and has been extended to a broad body of

¹ E.g., H. L. Ellison, 'Some Major Trends in Old Testament Study', *Journal of the Transactions of the Victoria Institute*. 88 (1956), pp. 32-36.

literature, some of which lies within the canon of the Old Testament, but most of which is extra-biblical and pseudonymous, belonging to the first century A.D. and the last two centuries B.C. Moreover, the author of *The Revelation* expressly calls his work 'a prophecy' (i. 3; xxii. 7, 10, 18, 19), and maintains that his visions recorded in it were the substance of prophetic ecstasy, (i. 10). He himself is called a prophet, (xxii. 9), so that there can be no doubt that in his mind *The Revelation* belongs to the prophetic tradition.

From our point of view, however, this is not a classification that is clear enough. Within the general classification of prophetic literature its authors have given us a great deal of different materials, prophetic oracles, summaries of teaching, often collected by the prophet's disciples, the life-story of the prophet or some other figure, and a number of others including what we have come to term apocalyptic. It is therefore this very association of apocalyptic with prophecy in the ancient mind which should impose on us the necessity to be clear with regard to the basis upon which we would distinguish the two.

Over seventy years ago, Herrmann Gunkel, with whom the Form Criticism of the Old Testament is first of all connected, argued that 'apocalyptic' was a word used all too freely by writers who did not have an agreed definition as to its precise meaning.² And the situation does not seem to have changed much since then. H. H. Rowley has consistently argued that apocalyptic literature is to be generally characterized by an occupation with the approaching consummation of history.³ It does not, like prophecy, indicate how the future would arise from the present, but rather how the future should break into the present. 'No longer' he writes, 'is the Golden Age on the far horizon, or even merely near, illuminating the present with its brightness, through lying beyond the present in an undefined and unrelated way. It is related to human history in the precise sequence of events that are to lead to its establishment.'⁴

² *Schöpfung und Chaos in Urzeit und Endzeit*. p. 290.

³ *The Relevance of the Apocalyptic*.

⁴ H. H. Rowley, *The Re-discovery of the Old Testament*, p. 186. Rowley has also given a valuable synthesis in 'The Literature of the Old Testament' in *Peake's Commentary on the Bible*, Ed. Black and Rowley, 1962.

Russell has drawn out a list of the more precise characteristics which may be observed. Though following Lindblom⁵ in seeing an emphasis on transcendentalism, mythology, a generally pessimistic view of history with its issue in the periodic division of time, and the doctrine of the Two Ages, Russell adds that apocalyptic, nevertheless, shows an insistence on the unity of history under God, a note of primordially in which the issues of creation and fall are extrapolated; there is, he says, a greater emphasis on the role of angels, a marked tension between light and darkness, and a developed interest in life after death. Not all these are of the unique essence of apocalyptic, but 'they build up an *impression* of a distinct kind which conveys a particular *mood* of thought and belief.'⁶ For this reason, argues Russell, apocalyptic literature displays a homogeneity which justifies its classification as a distinct *corpus* of literature.

It is hardly surprising, therefore, that there should be some difference of opinion with regard to the period of emergence of apocalyptic writing in the Old Testament. S. B. Frost,⁷ for example, maintains that Ezekiel was the first to write distinct apocalyptic, while for most others, (e.g. Rowley) it appears for the first time in Daniel. One of the more recent additions to the Isaianic collection, commonly called 'The Isaiah Apocalypse' (Isa. xxiv-xxvii) has also evoked strong criticism by a number of distinguished authorities.⁸ There is also general disagreement over the question of apocalyptic sections in Joel and Zechariah. Even *The Revelation*, which has largely given its name to this literary genre is either regarded as out-and-out apocalyptic,⁹ or as having little or nothing to do with Jewish apocalyptic tradition.¹⁰

⁵ D. S. Russell, *The Method and Message of Jewish Apocalyptic*. Cf. J. Lindblom, *Die Jesaja-Apokalypse*. *Jes.* 24-27 where he actually refuses the term 'apocalypse' to Isa. xxiv-xxvii, but which he prefers to name 'the Isaiah Cantata.'

⁶ *op. cit.* p. 105.

⁷ *Old Testament Apocalyptic. Its Origins and Growth*.

⁸ E.g., J. Lindblom, H. H. Rowley, J. Skinner.

⁹ E.g., R. H. Charles, *Revelation*, ICC (1920), F. C. Burkitt, *Jewish and Christian Apocalypses*, (1914).

¹⁰ Albrecht Oepke is cautious in *Theological Dictionary of the New Testament*, Vol. III, Ed. G. Kittel, p. 578f. (Eng. trans by G. W. Bromiley) Cf. also G. Eldon Ladd, 'Apocalyptic' in *The New Bible Dictionary*, Ed. J. D. Douglas and others.

The relation of later Jewish apocalyptic literature to prophecy does not need to entertain us here. Much of it may be regarded as a pseudonymous imitation of canonical prophecy. By its time there was no longer any prophet in Israel, (I Macc. iv. 46; ix. 27; xiv. 41) and apocalyptic became the substitute for prophecy. The later part of the Old Testament had, in fact, provided a preparation for this to take place. All the characteristics of later developed apocalyptic are to be found in Daniel, and it is not surprising that the books which followed should have taken up the style of the last of the canonical books. This problem appears most sharply in connection with *The Revelation*. It is difficult to understand this book except as a christian presentation of an essentially Jewish apocalyptic model. Yet it is difficult to trace any marked dependence of *The Revelation* on the pseudonymous apocalypses. By far the major dependence of the last book of the Bible is on the prophetic literature of the Old Testament.

How, then, may we distinguish apocalyptic from prophecy? The difficulty of making a distinction has become increasingly apparent as the older view of the prophets simply as moralists with exceptional talents has faded more and more from the picture. As H. H. Rowley has put it: 'That apocalyptic is the child of prophecy, yet diverse from prophecy, can hardly be disputed. An earlier generation emphasized the predicative element in prophecy, and the relation between prophecy and apocalyptic, in which the predicative element is particularly prominent, appeared beyond question. . . . Both the predictive element in prophecy and the moral and spiritual element in apocalyptic need to be emphasized.'¹¹ As to Lindblom's marks of apocalyptic, Rowley claims that 'some of these are rather the accidents than the essence of apocalyptic.'¹² Lindblom's list is in fact neither inclusive nor exclusive. Not everything in it, as Russell agrees,¹³ applies to all apocalyptic, and some of the characteristics mentioned can be noted in other literary forms of the Old Testament and Judaism, and some of them may not

¹¹ *op. cit.* p. 13.

¹² *Ibid.* p. 23, n. 3.

¹³ *op. cit.* p. 104.

necessarily apply to apocalyptic at all. To the extent that the list does characterize apocalyptic it includes mainly those qualities which apocalyptic shares with all the later Jewish literature, or which it acquired in a way which is strictly incidental, such as pseudonymity. So these properties, we may say, do not together form any adequate definition of apocalyptic. Much the same may be said about other characteristics which have been mentioned by other writers: fantastic symbols, doctrinal thought in symbolic guise, numerology, and the apparent predetermination of events on earth. Attention has been drawn by some to the editorial interest in numbers to be detected in the Pentateuch, not to mention Chronicles. The Book of Tobit can hardly be termed apocalyptic, yet it has a concern with the activity of angels, as does the New Testament in general. The coming of dualism into Israelite writing can be seen, possibly, in a comparison of II Sam. xxiv. 1 with I Chron. xxi. 1. Symbolism in apocalyptic may be excessive by comparison, but it is not by symbolism that apocalyptic is to be distinguished from prophecy.

In a fine study of apocalyptic, S. B. Frost¹⁴ has summed up, largely following Mowinckel, what appears to be a prevailing idea about apocalyptic. According to this idea the Exile, broadly speaking, marked the dividing line between the historical and the eschatological in Jewish thinking about the future. Prophecy belonged to the former sphere and apocalyptic to the latter. The last of the prophets therefore became, almost imperceptibly the first of the apocalyptists as the eschatological perspective replaced the historical. This meant that with the passing away of prophecy *simpliciter*, apocalyptic assumed the character and authority of prophecy, through pseudonymity, as an act of trust in the divine promises: the unrivalled prophetic oracles were now to be fulfilled in the *eschaton*. The development of eschatology, indeed, is the corollary of the total despair of history, which, as we have noted, was one of the marks assigned to apocalyptic literature by many scholars. Some would add to this that it was partly under Iranian influence that the apocalyptic writers accepted a deterministic outlook to explain to

¹⁴ *op. cit.* p. 56f.

themselves and their first readers the utter and irremediable evil into which the world had sunk, and which would otherwise have been irreconcilable with their conviction about a just and provident God. History, which had all but run its course, must, however *run* its course, no matter how bad things may become, since all would be set right in the Golden Age coming soon.

Besides laying emphasis on the eschatological character of apocalyptic, Frost considerably underlines the mythical element, which he likewise ascribes to foreign influence. Myth there was already in ancient Israel, properly the possession of the cultus, which remained lively so long as there was an optimistic view possible regarding the present and the future. But with the decline of the cultus, myth was appropriated by eschatology, and the result was the emergence of apocalyptic. Frost writes: ‘. . . we may define *apocalyptic* as the mythologizing of eschatology.’¹⁵

Frost’s view that the last of the prophets were the first of the apocalyptists is hardly other than acceptable. But we may ask if the distinction which he makes between history and eschatology was quite as real to the Old Testament writers as it has come to be to some of their modern exponents. Even if this be generally admitted, we may also wonder if the point when Old Testament thinking ceased to be distinctively historical and turned to explicit eschatology can be located, even approximately, with such an event as the Exile. In other words, does apocalyptic begin as a perfectly logical outgrowth, not to say aspect, of prophecy, discernable within the age of classical prophecy; or was there a change necessary through which the thinking, that Frost refers to, could emerge as apocalyptic?

As in ‘apocalyptic’, so in ‘eschatology’ there is a confusion of opinions. If we take eschatology to mean that expectation of an end of this earthly order, an end that will be an accomplishment of God’s purpose, and that a new order must inevitably result, it would seem impossible to deny that such eschatology appears in the earliest prophets. Even though in Amos, for

¹⁵ *op. cit.* p.33. For a critical appraisal of Frost’s view, cf. G. Eldon Ladd, ‘Why Not Prophetic-Apocalyptic?’ in *Journal of Biblical Literature*, 76 (1957) pp. 192–200.

example, we do not find all this explicitly spelled out, it must nevertheless be presupposed in order to make sense of the prophet's mind. What Amos condemns is not condemned in the name of some abstract moral principle, but as a rebellion against a divinely constituted world-order, (cf. vi. 12) and revealed to Israel through its election, (cf. iii. 1f.).¹⁶ The prophets were not philosophers of history; they clearly do not inculcate the idea that men, by taking thought and by aiming at some high ethical ideal alone that any earthly paradise can be attained. Sin is a transgression, (*pes'a'*) against the plan of God, which is a world-plan, (cf. ix. 7). But there is no doubt in the prophets' mind that God can and will bring that plan to its successful conclusion, with or without Israel. Yahweh's rule over Israel must be fulfilled in his rule over all.¹⁷

The idea of the 'Day of the Lord' can be found in the earliest of the prophetic writings. Amos, (viii. 9) speaks of it in apocalyptic language. What perhaps saves the utterance from being wholly apocalyptic is that the prophet refers here to a coming historical event, to be specific, to the total eclipse of the sun which was visible in Palestine on 15 June 763 B.C.¹⁸ This is doubtless the case, just as the description in viii. 8 refers back to the earthquake mentioned by the Prologue, (cf. i. 1). But the prophet's later utterances indicate, (cf. ix. 5f.) his use of the motif of cosmic disturbances is to signify divine visitation in Judgement. To us, that judgement is historical; it is an event that occurred, and after it the world went on. But how did it appear to the prophet? Granted that Amos' perspective was of judgement coming soon, he surely was not looking for another to follow after, for a whole series of judgements, but for Yahweh's definitive intervention. Is this not eschatology? In much the same way it might be hard to justify the view, taken by some, that there is an essential difference between the Day of

¹⁶ Cf. Norman H. Snaith, *The Distinctive Ideas of the Old Testament*, pp. 61-65.

¹⁷ Cf. Walther Eichrodt, *Theology of the Old Testament*, Eng. trans J. A. Baker, Vol. I, pp. 384ff.

¹⁸ Cf. W. R. Harper, *Amos and Hosea* (ICC).

the Lord of the opening chapters of Joel and that of the so-called 'apocalyptic supplement'.¹⁹

It is obvious that Amos, when he refers to the Day of the Lord in the first instance, (v. 18) is not coining a new expression, but invoking an ancient one. It appears here for the first time in the Old Testament, but it is not new in Israel. J. K. Howard has put the matter succinctly: 'The events of the Exodus and the establishment of the Davidic kingdom held hopes which thus far were unrealized in Israel's experience. That these promises would be fulfilled was essential to Israel's philosophy of history.'²⁰ The expression is the 'that day' of viii. 9, 13, quite as the apocalyptists mean it, the Day of Yahweh's vindication, of his settling accounts. It is true, nevertheless, that Amos is correcting an over-optimistic view of the consequences of this Day entertained by his contemporaries, and it is to this view that the apocalyptists in fact return, but it would appear from this that the difference between the apocalyptists and prophets, (e.g. Amos) on the matter lies not so much in eschatology as in the interpretation of eschatology.

It is questionable whether we should make any difference between the Golden Age of the apocalyptists and what Frost calls 'the Better Age' of pre-exilic eschatology, solely on the grounds of the extravagant imagery which we find in apocalyptic literature. The Royal Psalms show us that the use of mythical descriptive language does not of itself constitute an 'eschatological' as distinct from an 'historical' perspective. The messianic oracles of the prophets may suggest the same conclusion. It is difficult to understand what precisely consists the 'absolute' difference in the world of the apocalyptic *eschaton* which some find to distinguish it from the world of history. To speak, as some do, of a 'qualitative' difference is largely meaningless: 'qualitative' is not an Old Testament category. Time and time again the picture of the *eschaton* is that of a *restored* world, whatever changes we may find in the New Testament teaching. This belief in restoration is as old as the prophets and older than

¹⁹ Cf. A. S. Kapelrud, *Joel Studies*, but cf. also L. H. Brockington, 'Joel' in *The New Peake*, p. 614f.

²⁰ *Among the Prophets*, p. 85.

the prophets. It does not appear so clearly in Amos, because he is almost exclusively concerned with the Day of the Lord as a day of wrath for Israel, but it is clear enough in his contemporary, Hosea, who describes it not only in terms of Israel's great past, (ii. 16-18), but also in terms of a universal paradise of peace, (ii. 20). This last reference is to be connected with others as Isaiah ii. 4, xi. 6-8; Micah iv. 3; Ezekiel xxxiv. 25; all these presuppose the restoration of a once ideal world. The language is mythological, (to coin an explosive term!) like the language of Genesis ii. 4b-25. What other language could be used?

The difference in the apocalyptic *eschaton*, it is sometimes suggested, lies in its inauguration. Prophecy sees a fulfilment that comes about through the accepted pattern of divine activity—through cause and effect. Punishment or salvation is administered through natural phenomena, plagues, drought, locusts and the like, or through the instrumentality of other nations, even persons. But apocalyptic fulfilment comes through Yahweh's direct and extraordinary intervention, to be a definitive end in which he takes a personal hand. It is to be questioned, however, if such a careful distinction existed in the Old Testament mind. The Biblical view seems to be that the intervention of God, in judgement, or in mercy, is always unique. The Exodus, the passing of the Red Sea, the Conquest, are not any of them the outcome of any 'normal' divine action; they are all miracles. All of Yahweh's deeds of kindness to his people are his wonders.²¹ And the oracles against the nations which we find in the prophets from the very beginning, more often than not speak in terms of Yahweh's direct intervention. More often than not, also, the destruction of the nations is at the most only motivated in conventional terms. From this it would appear that the avowedly miraculous and general character of apocalyptic eschatology forms no radical change from traditional salvation-history, or *Heilsgeschichte*.

It is obvious that the Day of the Lord for the apocalyptists should be one of woe for the enemies of Israel and of salvation for the people of God, whereas among the pre-exilic prophets it is often enough a day of woe for Israel herself. Nowadays,

²¹ Cf. Psa. cv: 5.

however, it is generally recognized that to excise all the doom oracles from the pre-exilic prophets is a misguided exercise in hyper-criticism. Salvation was part of the message of these prophets from the beginning. Even Amos, who may be regarded among the gloomiest of the prophets, is willing to consider salvation as a possibility, (cf. v. 15). He did reject the popular notion of the Day of the Lord as one of certain bliss for Israel, to be sure, but he acknowledged the validity of the ancient promises of salvation, seeing in them the light of another ancient idea, that of the remnant.²² Salvation oracles are, of course, found more easily in the other prophets. Isaiah joins Hosea in describing the messianic age in terms of a universal peace restored to the whole of the animal kingdom as well as to the world of men, (cf. xi. 6-9, etc.). In Zephaniah we find it explicitly stated that the remnant of Israel will receive salvation after a universal catastrophe.²³ The idea is surely not new to Zephaniah, but he has drawn on a tradition shared by the prophets who preceded him. In referring to this Amos N. Wilder has stated²⁴ that it is necessary to see that eschatology is in the line of prophecy. 'If we are to draw a contrast it will be rather between a superior and an inferior eschatology throughout the period.'

The transition from prophecy to apocalyptic was an effortless one, for the prophets shared the eschatological tradition of which apocalyptic came to be the elaboration. The circumstances of pre-exilic prophecy will have decreed that this tradition should be minimized, but in the changed conditions that followed the Exile it could once more be allowed full sway, and the prophets themselves became the first apocalyptists.

There seems to be no good reason why we should deny that much of Ezekiel is apocalyptic. Besides the vision of the final chapters, we can see most of the 'agreed' characteristics in the

²² Though W. R. Harper, *op. cit.* p. 125f. suggests that Amos uses 'remnant' in a sense other than the technical one, of the nation as having barely survived the Aramean wars.

²³ Cf. A. Bentzen, *Introduction to the Old Testament*, Vol. 2, p. 154

²⁴ 'The Nature of Jewish Eschatology' in *Journal of Biblical Literature*, 50, (1931), p. 205.

two chapters, xxxviii.²⁵ The coming of Gog is set in the eschatological future. Gog comes to fill out the unfulfilled predictions. "Are you he of whom I spoke in former days by my servants the prophets of Israel . . . ?" (xxxviii. 17 RSV). He comes from the 'uttermost parts of the north'. Here, whoever may be the enemy from the north in earlier prophetic utterances, (cf. Joel), the expression is symbolical, the more so as Gog and the land of Magog have never been successfully identified, and Gog's full complement of nations includes those which no Israelite would have put in the north geographically. The invasion of Gog is the final one which the people of God must endure, after the restoration from exile, and then Gog and his hordes will be utterly destroyed by the power of Yahweh. It is interesting that the details within these chapters are much used by later apocalypticists, and especially by the author of *The Revelation*. Other commentators, if they will not concede that Ezekiel xxxviii. is apocalyptic, will at least concede that it is the prolegomenon of apocalyptic.

Another text which should be called in in this discussion is Isaiah ii. 2-4, paralleled by Micah iv. 1-5. Certainly one of the reasons that has persuaded many of the critics to assign a late date to this passage is its eschatological colouring and its apocalyptic tone. In a reign of universal peace the nations of the world assemble at Zion, now raised above the mountains of the earth, from whose temple comes forth the Law of the Lord. Those who defend the authenticity of the passage usually ascribe it to Micah rather than Isaiah, or think of a common source upon which both have drawn.²⁶ Without the necessity here of entering into the question of authorship, it is difficult to see why the passage should not be ascribed to an eighth-century writer; if we think of Isaiah in this connection it is probably only because we have more of his material to serve for comparative purposes. Isaiah knows otherwise of a coming reign of universal

²⁵ Cf. H. L. Ellison, *Ezekiel: The Man and His Message*, pp. 133ff. who links the forward-looking view of these chapters with Rev. xx.

²⁶ So J. Bright, 'Isaiah I' in *The New Peak*, p. 491, and D. Winton Thomas, *op. cit.*, p. 632. Y. Kaufmann, *The Religion of Israel*, p. 386, n. 4 favours Isaianic authorship as the stronger possibility of the two.

peace, (cf. xi. 6-8), and if Yahweh in Isaiah fills all the earth with his glory, (vi. 3) his instruction can likewise go out from Jerusalem, from the temple of Isaiah's vision, even as it did in the mind of Amos, (cf. i. 2). The symbol of the mountain of the Lord, as the goal of all nations, a conception not so distant from Ezekiel's 'nether world', is ancient in Israel, possibly taken up from the Jebusite Jerusalem-cult. Only a determination to deny to a pre-exilic prophet any 'eschatological' would appear to stand in the way of acknowledging the authenticity of this passage.

We may now come to a tentative formulation of the distinctive character of apocalyptic, and to determining its relation to prophecy. First, it seems not improbable that the position adopted by the *religionsgeschichtliche* school, that eschatology in Israel is anterior to both prophecy and apocalyptic, has much to commend it. This eschatology knew both of salvation and judgement. Without wishing to over-simplify, we may add that prophecy moralized this eschatology, whilst apocalyptic did not noticeably do so. Pre-exilic prophecy was much concerned with mitigating popular salvation-eschatology, but it did not exclude eschatology altogether in the process.

But alongside this suggestion it may be added that apocalyptic commences as salvation-prophecy. It achieves its most noticeable characteristics more clearly as it dispenses with those qualifications which the pre-exilic prophets required of Israel. These would have, in fact, been dispensed with as a result of historical development, with the growing conviction that Israel had fulfilled the trials allotted to her and the remnant had emerged. Thus post-exilic prophecy would incline to apocalyptic in the nature of the case.

What may have been a weakness of the *religionsgeschichtliche* school, however, was not its insistence on the antiquity of the pervading quality of myth in Israelite cult and prophecy, but rather in the origins it ascribed to this influence. Comparative materials that have now come into our hands, especially the Ugaritic literature, have enabled us to make good our understanding of this influence in Israel.²⁷ The prevalence of myth

²⁷ Cf. W. F. Albright, *Archaeology and the Religion of Israel* (1953), ch. 2.

(or symbol) in apocalyptic literature is not due to a change of direction in Israelite religion, but to the nature of the form itself. As the prophetic vision lengthened, the portrayal of the future became more and more blurred.²⁸ But doubtless not all foreign influence is to be excluded. Though there is nothing comparable to apocalyptic outside Israel, and though all the characteristics of apocalyptic can be found, at least in germ, in prior Israelite writing, apocalyptic nevertheless came more into its own when Judaism came into contact with the Gentile world, which doubtless exercised its influence.²⁹ Foreign influence, however, should not be exaggerated. The apocalypticists did not write like the rabbis, but they wrote ideas which were altogether within the confines of Judaism. The unfolding of Israelite ideas, as for example the development of the doctrine of resurrection, was always the chief factor in the variations of apocalyptic.

Therefore apocalyptic was left the heir of prophecy when the latter had disappeared. Apocalyptic became a literary form in its own right. It may be said to have retained the prophetic message but without the orthodox prophetic vision. It is usually on this basis that the characteristic of pseudonymity is explained.³⁰ Other characteristics picked up by apocalyptic writers are similarly explained as more or less accidental, from the time of composition and other circumstances. The spiritual exclusivism of the Scribes certainly played some part in provoking as a reaction the exuberant and lavish display of imaginative writing in apocalyptic.³¹ The esotericism which became one of the chief hallmarks in apocalyptic is probably to be explained

²⁸ This is the important point which is made by H. L. Ellison, *Men Spoke From God*, p. 115f. as distinct from others who are content to say that the vision of the future became increasingly mythical. This, I am convinced, is the wrong way of expressing it.

²⁹ Cf. D. S. Russell, *op. cit.*

³⁰ Rowley, *op. cit.* pp. 37-40, thinks of apocalyptic pseudonymity as a slavish imitation of the second part of Daniel, which was made pseudonymous by its author in order to link it with the first (anonymous) half of the book.

³¹ Cf. R. H. Charles, 'Apocalyptic Literature' in *Hasting's Dictionary of the Bible*, I, p. 109f. A. Oepke in *Theological Dictionary of the New Testament*, (Eng. trans by G. W. Bromiley) Vol. III, p. 578ff.

by the fact that, for example, in the Book of Daniel, literature of its kind assumed the role of 'resistance literature' keeping up the nationalist spirit, while hiding its meaning and significance from the occupying authorities. Whether it is permissible, with Charles, to conclude from this that subsequent apocalyptic writers, (e.g. the author of *The Revelation*) imitated their predecessors so that certain conventions arose, is doubtful.

There is no reason to qualify John's claim to be a prophet at the same time as recognizing the literary form of *The Revelation* as apocalyptic. The circumstances under which this book was written were in almost every way comparable to those in which the Old Testament and Inter-testamental apocalyptic books came into existence. The New Testament offers more than ample evidence of the functions of the prophet in the charismatic direction of the primitive Church, (cf. I Cor. xii. 28; Eph. ii. 20; iv. 11) nor need there be much doubt that their function included prediction as it had been with the prophets of the Old Testament, (cf. Acts xx. 23; xxi. 10). As has often been remarked, the apocalyptic visions of *The Revelation* give every sign of real experiences, not merely of doctrinal conclusions dressed up in visionary form.³² *The Revelation* marks a turn back of apocalyptic to its prophetic origins.³³ The author indicates this return by his clear dependence on Old Testament prophecy, almost to the complete exclusion of post-biblical apocalyptic. This was not done in order to minimize the spiritual value of the apocalyptic visions of the Old Testament. It means that the prophecy of the Old Testament had now been expressed in the opening up of an ultimate and more glorious vision of hope. We may not altogether concur with A.M. Farrer³⁴ that John's task was an 'artificial' one in the writing of *The Revelation*, but few will feel inclined to disagree with the sentiment that John's finished work had been 'to make a whole prophetic collection a dramatic masterpiece.'³⁵

³² Cf. A. M. Farrer, *The Revelation of St. John the Divine*;

³³ Cf. F. C. Burkitt, *Jewish and Christian Apocalypses* (Schweich Lectures, 1913), p. 6.

³⁴ *op. cit.* p. 29

³⁵ *op. cit.* p. 29f.

BOOK REVIEWS

The Scientist and the Supernatural

BY C. H. DOUGLAS CLARK

Epworth Press, 1966, 35s

The author, an atomic physicist, who has previously examined Russell's views (*Christianity and Bertrand Russell*, Lutterworth, 1958) here examines Julian S. Huxley's *Religion without Revelation*. Every point that Huxley makes is carefully weighed in the balance and compared with Christian teaching.

Huxley confuses the sense of awe with religion; music or buildings may inspire us, but they are not objects of worship. He fails to consider sin and offers no line of help for those who *want* to do what is right, but find it is beyond them. Penitence is a word he never uses. Huxley repressed his own sense of sin when young, having two breakdowns as a result; now he wants to eradicate the sense of sin in mankind. But success in this direction inevitably leads to a sense of smallness, worthlessness and inadequacy – the disease from which our society suffers. A sense of sin is not enough to make men mend their ways – they need God's forgiveness too – but it is hopeless to expect sin to be conquered unless we first recognize it as sin. Huxley wants to abolish cruelty and other evils, but he carefully cuts away the first step of the ladder.

The author shows how immeasurably superior the Christian faith is to any man-made religion or ethical system; psychologically it provides everything that is needed.

The book makes reference to many topics – commonly used psychological and philosophical arguments, psychical research, Bible difficulties, prophecy, the problem of evil, conversion and Christian experience, miracles, and so on. A number of biblical interpretations and applications are very interesting – St. Paul on a psychic (after-death state) and also a spiritual (after resurrection) body; our Lord's apparently inconsistent attitude to the evidential value of miracle; parables of wine and skins applied to humanism (patch the old human heart with good humanistic advice, etc.).

Many will find this book helpful; the extremely prosaic approach seems admirably suited to the requirements of the younger technician or scientist. The matter is arranged in about 170 numbered sections, with headings, in imitation of an elementary text book. The approach is remarkably unsophisticated.

Older readers will be less impressed. The sentences often seem rather unconnected and no clear style emerges. Interesting ideas are thrown up and dropped just when discussion seems called for. The elaborate referencing to Huxley's book seems overdone while references to other books seem much too sparing. The English is often awkward. The overall impression is that of a book pieced together with sweat and toil, rather than a work of inspiration. But in our day, when there is so much distrust of literary flourish and good style is almost at a discount, all this may be just what is wanted!

R. E. D. CLARK

The Role of Society and Science in Civilization

BY R. B. LINDSAY

Harper, 1963, 49s

The lectures contained in this book were originally given at Brown University and aim at explaining to non-scientists the role of science in society. As illustrative of the subjects covered there are discussions on the nature of common sense; the foundations of mechanics; determinism in physics; the 'crucial experiment'; value judgments in science and in the humanities; relations of music and art to science; science and philosophy; indeterminism; principles of impotence; the comparison of history with science; information theory; language; industrial research; ethics and science, and so on.

Dr Lindsay sees the chief dangers confronting us to be mental instability and, with all our efforts, 'diminishing returns of everything save utter boredom'. Rome, he thinks, became decadent because of its reliance on slaves – paralleled today by energy slaves which give us entertainment for the flick of a switch, while even the labour of thinking is given to the computer. Reading matter is plentiful but makes less and less demand on the mental effort of the reader.

The book contains much interesting matter but the writing is rather uneven. The author believes that one of our major troubles is 'the inability of the scientist to make clear to the humanist precisely what he is doing in graceful and appealing language'. Despite useful features, in the reviewer's opinion, at least, the author can hardly be said to have achieved this desirable aim.

R. E. D. CLARK

Issues in Science and Religion

BY IAN G. BARBOUR

S.C.M., 1967, 45s

This book, written by Professor Barbour (described in the publisher's 'blurb' as 'Professor of Physics and Chairman of the Department of Religion, Carleton College, Northfield, Minnesota') is an exhaustive treatise on science and Christianity. It covers most of the ground in so far as general principles are concerned but, with exceptions, does not deal with biblical passages of scientific interest. The author has had in mind the fact that hitherto there has not been available a text suitable for the courses in Science and Religion, or Religion and Culture, which are increasing features of American university life.

The compilation of this book must have entailed immense labour for which Christians of all persuasions, and many non-Christians too, will be grateful for years to come. The book is admirably suited for the needs of the lecturer. The style is simple and intelligible. Important words, which a speaker might wish to use as headings in his notes, are printed in italics – making it easy to pick out the main points of arguments in the highly condensed matter of the text. Inevitably, however, this approach means that there is no 'build-up',

no plot to be unravelled, no suspense to hold the reader's interest, no excitement in the chase.

Each chapter starts with a general statement of the views it is intended to discuss and the conclusions it is intended to reach. It finishes, once again, with a more extended summary. You know, always, what is coming!

The book is divided into three parts – the first historical; the second, 'Religion and the Methods of Science', the third, 'Religion and the Theories of Science' – thirteen meaty chapters in all. The literature cited is extensive but with an American bias. Since Dr. Barbour aims at a comprehensive coverage of the main writers in this field, some overlap and repetition is inevitable.

The author is both a physicist and a theologian by training and his knowledge in both fields, and in science generally, is impressive and precise. His attitude is objective and basically Christian throughout. Thus his treatment of death as a sleep to be followed by resurrection at the last day follows N.T. lines. He is emphatic, too, that Christianity is wedded to a creation doctrine of some kind together with an active concern by God in the affairs of nature. But like most 'liberal' American Christians he is anxious not to appear allied to fundamentalists, so he often prefers to write in the approved modern style! – 'The locus of God's activity was not the dictation of an inerrant book', etc. Similarly, he dismisses mind-body dualism on the ground that a man is an integral self – but he nevertheless gives an able summary of the evidence which supports such a dualism and, to the reviewer at least, the difference (if difference there be) between his views and those of the professed dualist, is subtle! If man survives death, sufficient of him remaining so that it may be said that he is resurrected (rather than recreated) at the last day, it is surely not unreasonable to think of him as a combination in some form of a material destructible substance and a non-material permanent soul, or spirit, or ethereal body, etc. Paley's watch analogy is also dismissed, though rather half-heartedly, largely on the ground that it over-emphasizes the transcendence of God. But all analogies are intended to emphasize, indeed to over-emphasize, some *one* aspect of truth, rather than all shades of truth at once – a fact which, in other connections, Dr. Barbour is at pains to emphasize. To be in the swim of things it is now fashionable to criticise the analogies and thought-modes of a past generation but if one's beliefs are basically the same, is play to the gallery warranted?

On this issue, Christians may differ: nevertheless, be it said, that on every issue touched upon, Dr. Barbour seeks to show that his views are supported by a fair appraisal of the available evidence and are biblical. He does not sit painfully on the fence: his words are crisp and pointed. But most of the space is devoted to telling us what Protestants, Roman Catholics, agnostics and atheists have to say. Here the objectivism displayed is impressive, and he fearlessly does battle with his own views as well as those he does not share! Many of the sections are superb – for example those on psychology, evolutionary ethics, emergence freedom and so on.

As typical of the conclusions reached we may cite the following – though it is impossible by quotation of isolated passages to do justice to the book. ‘Theology must not be based primarily on nature’; ‘Faith in God as Redeemer is more important than faith in God as Creator’; ‘We can only confess what has occurred in our lives; that we have made a mess of things, but that in Christ something happened which opens up new possibilities in human existence’. Though theology starts with revelation and personal experience, ‘it must also include a theology of nature which does not disparage or neglect the natural order’. In some way that we do not understand nature is plastic in God’s hands. We must not exaggerate the immanence of God, for God limited Himself by creating a world of stable order and freedom, nor, on the other hand, may we over-emphasize transcendence. In the end there is no adequate analogy for God.

Having said so much in praise of this book, it is right to turn to another aspect. The chief drawback of any text book approach is that it tends to kill emotion. The passionate years of search are reduced to a few prosaic lines which are made, in any case, to look painfully obvious. And so it is here. Every idea is nicely docketed in its proper place; every topic is neatly rounded off. One is left with the feeling that there is really nothing more to be said. Never throughout the entire work did the reviewer note a suggestion to the effect that further consideration, further research, along this avenue or that, might prove worth while. Indeed, the author seems to have suffered from his own approach – for constructive originality is singularly lacking. The result – a feeling of stagnation, a lack of inspiration! All so like traditional philosophy – indeed, much of the same ground is covered.

And so for a final verdict. Read the book through and you may suffer from mental indigestion: put it on your shelf and consult it occasionally and you will find it most rewarding – doubly so if you are called upon to lecture on the topics covered.

The name index is comprehensive but the absence of an adequate subject index is a serious drawback. Instead we are given page references to about 60 topics, but many obvious titles are missing.

R. E. D. CLARK