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PROPHETS OF GLOOM ?

This long-delayed issue of the *Journal* starts with a mild rebellion.

Sosthenes has been reading too many evangelical magazines, and too many of those little booklets which are sent unsolicited at their author's expense. 'Let us moan, groan and be miserable, for tomorrow we go to Heaven'. In short, the result has been to induce an acute attack of depression.

We all know, of course, that this country (and most others) is going to the dogs. To prove it, let us therefore cull the daily press for any alarming report or opinion, and republish it in our editorials. Youth has developed a strange sub-culture and a strange fit of self-assertiveness. We do not try to understand: let us deplore and denounce it. We have encouraged no Christian artist or writer to create true beauty or loveliness of the imagination, but we can wring our hands and catalogue the prurient who wallow in the mire. (Yet the *Sound of Music* goes on breaking records, Tolkien sells by the thousand on all the bookstalls, and all over the country youth groups mushroom, giving freely for the service of Christ that with which their secular fellows seek a fortune.) When prosperity increases, and deprived lives are enriched and enlarged by greater physical comfort, we can always bewail the rising deception of materialism. When men of goodwill try in their blundering ways to break down ancient barriers of hatred or misunderstanding, we can always point out that it but brings nearer the Roman Empire of prophecy, or the Great Babylon to come. Each new idea or discovery is at best sniffed at suspiciously—at worst there is always someone to denounce this new menace to the Truth.

Away with this shadowy army of gloom, and bring out the army of Christ, terrible with its banners! (At least they leave us the Song of Solomon with its innocent joy in love, for that is in the Bible—and we can read it for itself, as well as 'spiritualising it over'). But, oh my evangelical friends, what battle was won by sitting on a mountain top wringing one's hands for the might of the enemy? Where is the joyful self-confidence of Christ, of those who know His victory in the strife of the spirit and of the world, that laughs in the face of evil because it fears its ugly face no longer? Since when were the hearts of men to be won with a dirge?

As a modest start, may we eschew for a while this making of mud-pies in the puddles, and look up and fill our eyes and our thoughts and our mouths and our lives with those things that are 'true . . . honest . . . just . . . pure . . . lovely . . . of good report'. Who knows: some of that beauty may then show in ourselves and our profession, and men may again see amidst their madness the lights of the Kingdom of God.

Now to the nineteenth number of the *Journal*. With the *Broadsheet* now in issue, the *Journal* concentrates only on its own individual subjects, number by number, and the more important reviews. One of these is included this time: Mr. T. C. F. Stunt on *Patterns of Sectarianism*. It is hoped that a later issue will include extended reviews by Dr. Philip McNair of the two recent histories of the Brethren Movement.

SOSTHENES

SCIENCE AND FAITH

INTRODUCTION - GOD OF THE GAPS?

'The advances of science and technology . . . all . . . affect the man in the street and contribute to his sense of uneasy confusion'. (J. R. W. Stott, *Our Guilty Silence*, Hodder and Stoughton 1967, p. 33.) Many still feel today that Science and Technology hold all the answers and that the need for God has receded further into the background. Therefore this issue is devoted to a number of topics covering various aspects of the boundary between science and Christianity. The first paper, written by Terry Martin (at the time of writing a Physics undergraduate at Queen Mary College, London) assesses the impact of science and a scientific training upon a Christian. He sets himself to answer the following questions: 'Is the enterprise of science legitimate? Is it worthwhile for the Christian to follow? Does science have any moral issues?' To the first question he answers, yes. There is today, I believe, a return to the clear understanding that it is God's world that we are living in, and that man's purpose is to subdue it (Gen. 1: 28). The word 'subdue' surely means that fields of human endeavour, research, exploration, endurance are legitimate activities for man and particularly for the Christian. As always it is what is done with the knowledge, once it is available, that is the crucial point. There are still those who think that some of the developments that arise from science are evil—urbanisation, industrial life etc.

'And was Jerusalem builded here
Among these dark satanic mills'

Does science raise moral issues? Are certain lines of investigation allowable, are there any restrictions which should be placed upon scientific activity? If there are, how is it to be decided? Terry Martin's conclusion is here somewhat tentative but he suggests that it is possibly right for certain lines of research to be curtailed. With the current awareness in this area (e.g. Porton Down etc.) this will provoke fruitful discussion.

In the second paper, by Professor Robert Boyd, we are concerned with the origin and the nature of the universe. Prof. Boyd mentions two current cosmological theories. In the first it is suggested that some 10,000 million years ago all the matter in the universe was concentrated in one region and that it then exploded and was thrown out in all directions. The second theory is that of continuous creation. Perhaps the Christian's natural reaction to these theories is to prefer the former, since it appears that Genesis suggests that God created everything at one point in time long ago. However, this does not take into account that God is free from the limitations of time and space. God is bigger than we imagine Him to be. Our reaction then to cosmology and to current developments should be to welcome it all, confident that it may tell us more of the wonderful universe we live in.

We then have two papers which discuss the area which is the centre-piece in the unhappy conflict between science and Christianity, which has often led both scientist and Christian to adopt entrenched positions. Dr. Zandrino (a biochemist and our first Argentine contributor to the *Journal*) in his paper catches something of the wonder of God's creation, reminding us of the fact that it is God's world and that He made it. The more the scientist can tell us the more wonderful does God's work appear to be. Dr. Gareth Jones carefully takes us over the grounds of the controversy. He draws a clear distinction between the different levels of 'evolution'. He asserts that the detailed mechanism of biological evolution is of no concern to the Christian as a Christian, but that the conflict emerges at the level of the philosophical approach to evolution. The opening two chapters of Genesis are then considered and a tentative suggestion as to their interpretation is made.

The final paper is concerned with the nature of man. It is noteworthy that some of the themes of this paper are common to some of the earlier papers. It is Paul Hyland's contention that the scientific and Christian interpretation of the world and of the nature of man can be united, and in support of this he quotes from Teilhard de Chardin. (Paul is a science and philosophy graduate of Bristol University.)

It might be said that the papers cover the more traditional areas of discussion between science and Christianity, and this point is conceded. Areas that could be expanded include further discussion on the nature of man, and on the mind of man, and the whole subject of the technological age. Contributions on these subjects are invited and if sufficient are received it is to be hoped that a whole issue can be devoted to these areas or, at least, that articles on them will appear from time to time in these pages.

J. P. REDFERN

THE IMPACT OF SCIENCE UPON ONE'S PERSONAL FAITH

by TERRY MARTIN

The subject of 'Science and Christianity' has been the centre of much discussion and debate; and as long as science remains a dominant force in our culture it is only correct that Christians should continually address themselves to the whole extent of the problem.

It will be helpful to distinguish some of the different issues that are involved. First, we are confronted with the ever increasing store of scientific facts about the physical world and man. How do these facts correlate with those that we obtain from Biblical revelation? Analysing particular difficulties may well throw light upon the Biblical record, and the way we should understand it! Such specific areas of conflict (apparent or otherwise) are the concern of the other three papers.

Secondly; science is more than an accumulation of facts, it is a *method* and approach at comprehending reality and rationalizing our experience. One of the consequences of its activities is the production of its own world view upon the nature of things: a world view which reflects the assumptions, methods, scope and limitations of the scientific approach, and which is undoubtedly a mechanistic one². How can such a view be held by one whose Christian faith brings such a different insight on the world and man?

Thirdly; we must remember that science is also an enterprise, embarked upon by the individual in complex relationship to many others, and with its own conditioning of thought processes and outlook. It is as much a job as bank clerk or accountancy, and like any job it has its own peculiar problems and consolations for the Christian.

The above division is somewhat artificial, since the different aspects are implicated in each other, but it will serve to indicate the principal scope of this paper, which is concerned with the effect that 'being involved in science' has upon one's personal faith.

One of the first questions that must be faced is whether or not the scientific enterprise is such that the Christian can take it seriously, and deeply concern himself with it. For like all other Christians he shares in the common hope for the future, with its new heaven and new earth, and he is aware that the present order is passing away, only a shadow of the things to come. What therefore is the significance, purpose and value of scientific activity, which is committed to the task of understanding and controlling the physical world? This is a crucial issue for the individual who takes seriously the prospect of standing before the judgment seat of Christ to have his works tested by fire³.

If only specifically 'religious' functions and activities are considered of ultimate importance, then one's secular occupation in itself will be viewed as somewhat irrelevant to the main purpose in life, unless of course it lies within the sanctified field of the real vocations of medical and humanitarian work, which exemplify in some way or another the ministry of Jesus. However this is very unsatisfactory for one seeking a unified outlook upon his total life from the vantage point of his Christian faith, as it excludes such an outlook from the start, with the consequences of denigrating the scientific enterprise, departmentalising one's life and dichotomising one's thinking.

The Christian faith is bigger than the soteriological mould into which it is too often squeezed, and a wider and deeper understanding of it will throw light upon the present problem. Any consideration of it must not start with the cross or the incarnation, but with the infinite-personal God who has created from nothing a real universe outside of Himself⁴, and which He continually upholds and sustains. God finally created man so that he was distinct from the rest of the universe, in that like God he too was personal, being made in the image of God. However, man was also organically related to the physical world, and was created to live in a

certain relationship to it, at the same time to live in a certain relationship to God. The subsequent act of disobedience changed the state of affairs somewhat, but did not alter the fundamental purpose of man, which must be appreciated in the light of these two relationships (both of which suffered from the effects of sin—the creation is even now groaning in travail, awaiting release⁵.) Man was to have dominion over the earth⁶, and consequently he needs first to understand it. Even so, this investigation of the physical world is not an autonomous activity, divorced from the ‘real purpose’ of life, for it constitutes an essential part of the total vocation of man in the world. Yet it can never be an ultimate concern in and of itself, though one non-Christian⁷ can see no other long range motivation for the human species than the quest for knowledge. Modern science has become secularized⁸, and separated from its proper position, giving glory to none but man alone.

We conclude that the scientific enterprise is a legitimate and worthy one when engaged upon in the right, Biblical spirit and for the correct motive, and that the whole edifice of knowledge and understanding that science is building is significant, and not irrelevant or secondary to a personal Christian faith.

Another question that must be faced is that of the moral consequences of a particular piece of research work. Knowledge in itself is morally neutral, but the very possibility of the wrong application of such knowledge may well constitute a sufficient deterrent from even starting the enquiry. These days much research work is backed by government grants, and in America especially this is largely in the interests of defence, and space research. One may well question whether the expense incurred is justified by the information obtained, or in the former case whether it is morally defensible at all. Automation, a fruit of scientific work in cybernetics, is a major contemporary social force, but it requires careful and responsible application, and perhaps restriction. The value of the individual as a person that Christianity brings, may well limit the field of scientific enquiry and technological application.

We have so far considered the insights and assurances that a pre-commitment to the Christian faith can bring to the scientist, but what sort of tension can arise from the implications of his work?

One such tension becomes apparent on reflection upon the history of science. Though claims must be pressed with care it is evident that modern science owes much to the impetus of the Protestant Reformation⁹. Biblical ideas of the rationality and revelatory nature of creation, of man’s place as lord of creation, and of nature as something to be known from empirical enquiry, did much to evoke and support the new science of the sixteenth and seventeenth centuries. Many of the great men in the tradition were ardent Christian believers—Bacon, Boyle, Newton, Faraday, Kelvin, Maxwell—and they all found their Christian faith a help to their work. Now we are confronted with the totally opposite situation—science has assumed an autonomous existence divorced from its Biblical foundations,

and is now one of the dominating influences in the secularization of our culture⁸. Most scientists today¹⁰ are not practising Christians, and many use their work, or rather a particular philosophy behind their work, for anti-religious ends. This is especially evident in Communist countries, where it is almost state policy, but is no less present in the 'free' world.

As mentioned in the introduction to this essay, science has built up for itself a 'world view' of the nature of things, which is intended to be comprehensive within its own terms of reference. It seeks to understand how things work, and to explain natural phenomena in terms of fundamental laws and relationships, and to do so without reference to occult or metaphysical notions. The object of its enquiry can be anything of which we have empirical knowledge, and that can include man viewed as a purely mechanistic or naturalistic phenomenon. Does not this rather discredit the Christian way of looking at things, with all its metaphysical concepts, beyond the realm of falsification or verification by empirical research? Proposed answers to this tension have inevitably made reference to the concept of complementarity¹¹, but it is one to be applied with care. Truth is one, and it does more to aggravate than relieve the tension to suggest that certain things can be religiously true whilst scientifically demonstrably false¹². Nor is it very satisfactory to postulate two entirely different fields of knowledge¹³ ¹⁴, one to deal with the category of the impersonal (science), and one to deal with the category of the personal (religion). For the tendency is to lift the issues of the Christian faith out of the area of history, space and time, in which they are inextricably involved, into an upper-storey of non-rational experience, where crucial concepts are reduced to symbolism, and all one can do is to make a 'jump of faith'. In its extreme development what one has faith in then becomes somewhat arbitrary, for there is no criterion of truth, all that counts being the personal value of the experience itself.

The genius of the Christian position is that it alone guarantees the the validity of true personality, by its presupposition of the infinite-personal triune God, who creates man in His own image. Appreciated thus, even such 'metaphysical' notions are not so far fetched as some would venture to suggest, for they do provide real answers to the universal experience of all men, of a sense of significance, and of love and communication with other genuine personalities.

We have already anticipated an analogous tension: the object of study in scientific work is impersonal (or at least treated as if impersonal) and therefore the scientist's relationship to *it* would not seem to be implicated in the main thrust of biblical moral teaching, which is primarily concerned with one's relationship to God and one's fellow men (e.g. the Ten Commandments and Sermon on the Mount). However, it must be realized that science is not a lone enterprise, but a communal activity¹⁴, where faith is exercised in the honesty and integrity of others. Also Biblical teaching does speak of the *motivation*¹⁵ that should be behind our actions, whether they are involved with other human beings or not.

Lastly, a mention of the tension that arises out of the extreme specialization in all aspects of modern life, including of course science. The consequences can be a diminishing sense of real communication with others, including the worship, ministry and fellowship of the church, where the relevance of one's faith to the concrete issues of daily life is not always apparent.

In conclusion, we would like to affirm our conviction that science is a genuine vocation for the Christian in the world, offering the possibilities of creative thinking and the opportunity to make an individual and permanently valuable contribution to man's understanding.

NOTES

1. *Scientists look at the Bible*—by R. L. F. Boyd and others. Especially chapters 1 and 2.
The Christian view of Science and Scripture—B. Ramm. Chapter 3.
2. *Christianity in a Mechanistic Universe*—F. H. T. Rhodes, in a Symposium of same title—edited by D. M. Mackay.
3. 1 Cor. 3:13.
4. This lack of balance in our theological thinking is perhaps reflected in a corresponding lack of a real worship meeting in Assembly life, as pointed out by P. H. Stunt in p. 32 of CBRFJ 15.
5. Rom. 8:19 - 22.
6. Gen. 1:26 - 30, Ps. 8.
7. *Man in the Universe*—by Fred Hoyle, p. 79.
8. *The Secularization of Science*—by Dr. Herman Dooyeweerd (*International Reformed Bulletin* No. 26, July 1966).
9. *Christianity Today Magazine* Vol. 10 No. 2, Oct. 22 1965. Article by H. Stob—*A firm foundation for Modern Science*.
10. A similar list of great names in science for the twentieth Century would find very few who owned any Christian allegiance, though some did have their own peculiar religious ideas in contrast to the prevailing positivistic spirit: e.g. A. Einstein claimed he believed in Spinoza's 'God', and E. Schrodinger embraced a Hindu pantheistic position. See his book—*My view of the World*, (C.U.P.).
11. *Reason, Revelation and Faith*—article by R. L. F. Boyd in symposium cited in reference 2.
12. *Religious Faith and Twentieth Century Man*—F. C. Happold pp. 48ff. (Pelican).
13. *Chance and Providence*—by W. G. Pollard, p. 153 (Faber and Faber).
14. *Physicist and Christian*—W. G. Pollard (S.P.C.K.).
15. Col. 3:23.

THE ORIGIN AND NATURE OF THE UNIVERSE

by R. L. F. BOYD

1. The Scope and History of Cosmology

Cosmology, the branch of science concerned with understanding the Universe as a whole, has its origin together with astronomy away back in antiquity with the Babylonians and Egyptians. It was, of course, mixed up with religious ideas and with astrology and arose from man's effort to understand his environment and his relationship to it. The accumulated data of observations was fitted by the Greeks into a mathematical, that is to say rational, symbolical scheme, but understanding in terms of physical law as we know it today was entirely absent. Indeed it was characteristic of Greek thought to look for *final* (i.e. purposive) causes while modern science eschews these and considers only *efficient* (i.e. mechanistic) causes.

Until the sixteenth century, when Copernicus enthroned the Sun instead of the Earth at the centre, the thinking was not only purposive but homocentric and the storm of Galileo's struggle with the Roman church is well known. Unfortunately the lesson of this blow to man's pride was not well learnt. His centrality in the Universe was perforce surrendered but the desire to base his uniqueness on the physical dies hard, as the echoes of the evolution controversy still show. So strong was the instinct to put Man at the centre that the Greeks were prepared for endless complications in the mathematics to meet their philosophical presuppositions, to 'save the phenomena' as they put it. The phrase itself is eloquent of their attitude—an attitude not wholly absent today. One is reminded of the German professor of theology who, on being told that his theories were not entirely in accord with history, is said to have replied, 'So much the worse for history'. But the empirical attitude eventually prevailed and today, whatever might be his practice, every cosmologist would claim, like Huxley, to 'sit down before the facts like a little child'.

The facts, indeed, have confirmed the appropriateness of such humility, for bit by bit the world of the Chaldeans, in which astrology was at any rate not patently absurd, has given place to a cosmos so vast and so regular and so subject to mathematical analysis that the problem today is to convince men that they have any significance at all. Psalm 8 stands out as a balanced and sober appraisal amidst these excursions of the philosophical pendulum.

In less than a century from Copernicus further cracks began to appear in the 'Caelestiall Orbes' as Thomas Digges replaced the sphere of fixed stars by an infinity of bodies extending throughout an infinite universe.

Kepler and Newton completed the demolition of the spheres, and the latter established the rule of physical (that is to say causative) law in the heavens as on earth.

The dethronement of the Sun became total, as with the great telescopes of the nineteenth century the Milky Way was resolved into individual suns and our location was found to be far from central in this galaxy (or Universe as it was then called). Just fifty years ago our galaxy itself lost all claim to physical uniqueness as many luminous nebulae were found to be complete 'universes' like our own Milky Way.

To understand the task and ethos of cosmology it is useful to remember the tremendous step that Newton took. Tycho Brahe, the last great astronomer to observe without the aid of the telescope, had obtained with immense labour data on the positions and motions of the planets, and Kepler had found a pair of empirical mathematical relationships that the motions satisfied. Now all of this is pure description. Nothing apart from an aesthetic sense suggested that the motions *ought* to follow mathematical law, and nothing enabled the particular laws to be predicted. But the Newton myth (if that is the word) tells how Newton seeing an apple fall (and a scion from a true pip is still to be seen in the National Physical Laboratory grounds!), and noting that the Moon moved in an orbit instead of shooting off into interplanetary space, perceived a causal connection. The terrestrial event (the fall of the apple) and the celestial phenomenon (the course of the Moon) were both to be attributed to a common and *universal* force (the force of gravity). Thanks to Kepler's work Newton was soon able to show that the same force accounted for—caused—the motion of the planets.

It is this idea that the history and phenomena of the heavens are to be accounted for in terms of terrestrial physics that is the basic presupposition and task of cosmology.

It is noteworthy that this task has nothing to do with ultimate origins or final causes, nor indeed are teleological arguments relevant. It could be true that iron occurs as it does in the universe in order to make our technology possible, but the cosmologist in common with other scientists wants to know not 'why—for what purpose?' but 'how' in the sense of 'how come?'

Cosmology is an observational, in one sense an historical, rather than an experimental science and we shall see that its presuppositions are less uniformly held and so less deeply buried in the subconscious than those of other sciences.

2. The Structure and Age of the Universe

We saw that Thomas Digges suggested that the 'fixed' stars were not in fact set in a sphere but distributed through an infinite space like currants in a bun. This idea raises an interesting question: 'why is the sky dark at

night?' If one supposes space to be perfectly transparent (and indeed it does appear to be very nearly so in most directions) then Digges' infinity of stars would necessarily reveal a star ultimately wherever one looked. They would not of course all be resolved but every line of sight would ultimately terminate on a star just as every line from the centre must encounter a currant if the bun is large enough. Such a universe would be incredibly bright, looking something like a sphere whose inner surface was like the surface of the Sun.

Arguments such as this lead to the idea that the visible Universe cannot consist of a uniform population of stars stretching to infinity. That the visible Universe is finite is shown by another related line of evidence. If we look at the light from very distant sources we find it to be reddened. The only satisfactory explanation for this reddening that has been advanced is that these distant galaxies are receding from us at tremendous speed and the light is suffering a shift to lower frequency, analagous to the so called 'Doppler shift' in the pitch of the whistle of a receding train. The observations are consistent with the speed of recession being proportional to distance, and this fixes a radius for the visible Universe since no light can reach us from beyond that distance at which the speed of recession is equal to the speed of light. This distance is known as the 'Hubble radius' and has a value of about three-thousand million light years.

It is to be noticed that we have been speaking of the visible Universe. Physics is concerned with that which is observable and strictly speaking matter beyond the Hubble radius is no concern of physics, but it is impossible completely to shrug off the philosophical or aesthetic considerations involved in the concept of a Universe which is infinite although only a finite part of it is in principle open to investigation. However, as we shall see, we do not necessarily have to accept this concept.

Astronomical figures are notoriously unimaginable, but it may be helpful, if only to engender a right reverence, to set some down.

Some Numbers, Distances and Times

Number of atoms per cu. cm. of water	3.3×10^{22}
Approximate number of stars per galaxy	$10^9 - 10^{11}$
Approximate number of galaxies in 'visible' Universe	10^{10}
Approximate diameter of our galaxy	10^5 light years
Distance to nearest star	4 light years
Diameter of 'visible' Universe	7×10^9 light years
Age of Earth	3×10^9 years
Age of 'visible' Universe	Less than 10^{10} years

The Universe contains an enormous range of temperatures and densities of matter. In the hot interior of stars the elements so vital for life and

industry are manufactured under conditions we are, at present, quite unable to reproduce.

If we work outwards from the Earth, we find that the Universe contains a considerable variety of bodies. The Earth is one of a very varied collection of nine planets orbiting the Sun, which itself is an unspectacular star situated well away from the centre of our Galaxy. The galaxy itself is a member of a cluster of galaxies.

To this fairly straightforward list of celestial objects we must add others, some long familiar such as comets, meteors and asteroids, which together with natural and artificial satellites are members of our solar system, and some only recently discovered such as the quasi-stellar objects, quasars, which seem to have some star-like some galaxy-like properties. Between these relatively large objects, which are in fact far more varied than their classification implies, space is populated by dust and gas and traversed by light visible and invisible and by energetic particles, all of which may be far more important than their unobtrusiveness would suggest.

3. Relativity

I have said a good deal about space, but we must always remember time is just as much part of God's creation; just as *given*, as is space. Until the dawn of the present century time was thought of as an unchanging aspect of existence. It was quite unaffected by anything man could do and quite unrelated in its actual flow to either the psychological state of the individual or the place in the Universe where its flow was observed. However, certain experiments on the speed of light showed up a more complex situation. Speed is a quantity relating space and time (the distance in space traversed in unit time) and the intriguing thing about the experiments was that they showed the speed of light always to be the same, whether measured by someone moving in the same direction as the light or in the opposite. A moment's thought will show that this is very queer. It is certainly not the case for the speed of sound or of cannon balls for example.

To make sense of this it became necessary to recognise a certain interchangeability between space and time so that if one observer were to measure the distance and time interval between two events the values measured for the same two events by another observer moving with respect to the first would be found to be different. This implies that simultaneity is purely relative. I may observe two events as occurring at the same time at two different places in the Universe, another may observe them as occurring at different times and separated by a different distance. (This is a real difference, not just an apparent difference due to the fact that any signal takes a finite time to travel from the event to the observer.)

4. Presuppositions

It is insufficiently realised that all kinds of knowledge start with some kind of act of faith, with some presupposition. The mathematician

presupposes the rationality of thought and the scientist believes in the uniformity of nature. That is to say he believes that the laws of physics, applicable in one place and time, will apply in another place and time. In particular he believes, and there is no other word for it, that the Sun will rise tomorrow, though he cannot prove it, and that kettles will not boil on ice and freeze on the fire though he cannot prove that either.

Now when one comes to cosmology this principle of uniformity assumes great importance for we do not know to what extent, if at all, the laws of physics are dependent on the configuration of the Universe at any given moment. For example do we suppose that the velocity of light (or indeed any other important physical constant) is quite independent of the size or age of the Universe? Generally speaking the attitude taken by cosmologists is that we must assume more than we have adequate evidence for or else give up cosmology. If after that the picture calculated on these assumptions tallies with observation our belief in the presupposition is strengthened. This, of course, is no different in essence to the attitude taken in every branch of science, but confidence about sunrises and kettles is easier because of their frequency. The Universe is, for us at any rate, unique.

The two most commonly held forms of the principle of uniformity held by cosmologists are (1) the narrow cosmological principle, which is the belief that there is no preferred place in the universe—no centre—but the broad features, including the physical laws, are the same from whichever point in the universe the (hypothetical) observer makes his observations. (2) The wide cosmological principle which includes the narrow but considers the broad features to be the same not only at every place but also at all times.

5. Kinds of Cosmology

Now the amusing thing about it is that if one assumes the wide cosmological principle it leads by logic alone to continuous creation, for since the universe is observed to be expanding, only by continuous introduction of new matter can its mean density be the same at all times. This is not physics. It is more like mathematics or philosophy or aesthetics. Nevertheless if the observations could be shown to be consistent with the continuous creation model most physicists (including myself!) would find the concept acceptable.

Until recently those who only accepted the narrow cosmological principle favoured the idea that the Universe started as some sort of huge primordial atom which exploded and the receding galaxies are the remnants of that vast expansion. In principle it should be possible to decide between these two views by observing the way the galaxies thin out with distance, but the observational problem is immense and there are many complications.

However, the recent discovery of the quasars has thrown cosmology into such turmoil that it seems best for plain men (including honest physicists!) to wait for the dust to settle. At present there seems to be a swing away from the continuous creation idea towards some sort of oscillatory picture in which the universe is thought of as first contracting and then expanding.

6. Creation

I am very conscious that I have done the universe scant justice in what I have written, and most cosmologists will feel I have done them scant justice too. Cosmology is a difficult branch of science, and aesthetics and ideas of fitness do play a prominent role, but it is an important activity and one that must move the Christian to worship.

There are those who think cosmology to be of theological significance, that the question of physical origin in time is relevant to theistic belief or unbelief. For my own part I see no such relevance. The idea of spontaneous creation of life was widely held until the time and work of Pasteur. If matter or energy or life could be shown to occur spontaneously (i.e. without traceable cause) then it would just be a fact like any other fact, neither more nor less mysterious than the more familiar facts of our world.

The mystery of being is neither heightened nor diminished by ideas one way or the other about an origin in time. Relativity helps me to understand God as the Eternal—the Giver of space and time, by Whom all things hold together.

I am no Hebraist but my impression is that the idea of creation *ex nihilo* which seems to be invested by many Christians with some kind of mystical significance, is not really a Biblical idea. The word *bara* seems to be used for the preparation, forming or introduction of something new and often it is clear from the context that God used matter already existing. Thus God created man from dust, woman from man. Indeed Psalm 104 depicts continuous creation, for it says of the *creatures* of the field 'Thou sendest forth Thy Spirit, they are created (*bara*)'.

If one looks carefully at the first chapter of Genesis, one will find that it is giving a picture of the way God prepared the Earth as a domain for the *imago dei*. And the picture is from a man's point of view, just as it would have appeared to a human observer. Reading it alongside the book of Nature as I read it as a scientist it goes like this.

First the Earth and its atmosphere congealed from the surrounding debris. It was dark and the Earth was featureless (like Venus today?). Next light broke through and the atmosphere cleared of much of its moisture. Land appeared and from the earth vegetation was formed. The clouds scattered and the orbs of heaven appeared. From the waters every kind of animal evolved.

All this God did, and without the Son was not anything made that was made, and it was very good. Hallelujah.

EVALUATION OF THE FIRST CHAPTERS OF GENESIS

by MIGUEL ANGEL ZANDRINO

In this age of prodigious scientific conquest, the Bible is still the authoritative Word of God.

There have been many who, at different times, have attempted to read just the contents of the Bible. They have thought the Book was too old and outmoded, and that to bring it up to date would be to enrich it, dealing with it as with encyclopedias: publish new corrected editions or supplements and appendixes. One of the problems which is most disturbing to these people is the cosmivision of the Old Testament, which they consider is not in accordance with modern cosmology.

We shall endeavour in this paper to consider some of the chapters most often brought under fire, to see if they satisfy us in the light of what man has discovered about the universe.

The Two Creation Accounts

From Genesis 1 to the third verse of Genesis 2, the reader encounters a majestic account of creation. God Omnipotent expresses His will and at His Word worlds and universes appear. Vegetable life, aquatic animals, birds, higher animals and finally man are born.

This magnificent chapter has been considered as a history of beginnings and an inspired song of Creation.

But from 2:4 on we meet with a completely different scene. The narrative presents Jehovah God, who in contrast with the transcendent and spiritual God of chapter 1, is an anthropomorphic God.

Let us recall some passages: 'These are the generations of the heavens and of the earth when they were created, in the day that the Lord God made the earth and the heavens, and every plant of the field before it grew . . . Then the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul. And the Lord God planted a garden eastward in Eden; and there he put the man whom he had formed'.

Thus in verse 7 describing the creation of man, we at once see the image of the potter working his clay. Later on the writer states that 'God planted a garden' and we cannot help thinking of the gardener who spade in hand is doing his work. Then we read that Adam and Eve 'heard the voice of The Lord God walking in the garden'. Once more the author of Genesis resorts to anthropomorphism. If we bear in mind the saving purpose of the message of revelation, we shall understand the tremendous value of the teaching of these chapters.

Lessons from the Accounts

In the first place, God is a Spirit. It is as such we discover Him in the song of creation. He is the First Cause, the Transcendent Being. He creates the universe, but Himself is outside His universe. He is greater than all the world. He is a being so great, powerful and mysterious that it is beyond our thought. And he is so far away that if the revelation of what God is were to end there, it would be simply an idea which we would be unable to grasp. King Solomon stated: 'Behold the heaven of heaven cannot contain thee' (1 Ki. 8:27) and later Paul said that God dwells 'in light which no man can approach' (1 Tim. 6:10).

But this God who is so far away, whose dwelling we cannot even situate as it is beyond the unmeasurable universe that He has created, has a special interest in man and in all that may happen to man, He is not merely an observer from His throne on high, but is One who with personal care occupies Himself and preoccupies Himself with everything that happens on earth.

So that primitive man, the first reader of these pages, might understand these truths and think about God, He manifests Himself as a man, a person. He has a proper name. He is not merely God, but Jehovah God. He intervenes in the life of man, and acts on a human level.

And so that we in the present day of great scientific discoveries and of atomic and demographic explosions may always have with us this outstanding and fundamental aspect for our faith of what God is, these chapters are as fresh and efficacious as they ever were.

The Bible then leads us naturally to that truth which is so much beloved of all believers: that this Omnipotent God, pure Spirit, who is above and beyond creation, is at the same time everywhere, penetrating everything.

The Elohim of Genesis 1 must be illustrated by the anthropomorphisms of Jehovah God of chapters 2 and 3, so that we may be able to have a more perfect idea of what God is for us.

Principle of the Creation and Sustaining of the Universe

Paul in his speech to the Athenians said that in God 'we live and move and have our being'. This is the way in which God manifests himself in the universe, is present everywhere and penetrating everything, while all creation is in God.

Someone has said 'This work, the world, is like a thought of God's. Its state of creation implies the constant presence of the Creator, and not merely the initial flick of a finger'.

All things have their beginning. But it is not in the plan of God to have created everything and then to have stopped after establishing laws and forces to carry on His work. The primary idea of Genesis 1 is that

God is in the beginning of everything. In the following chapters, we see Him carrying on His work. His intervention is not limited to the origin of things and beings. In the Scriptures we see that His constant presence through ages of history is necessary. And it is Jehovah God who in a personal manner occupies Himself with the future of the world.

Ps. 104 is, like Gen. 1, a glorious song to creation. In the end it presents an image of the world and the beings which inhabit it, saying 'They wait all upon thee, that Thou mayest give them their meat in due season' (once more we have anthropomorphic figures. In this case it is the Lord feeding His creatures) 'That Thou givest them they gather; Thou openest thy hand, they are filled with good. Thou hidest thy face, they are troubled; Thou takest away their breath, they die, and return to their dust. Thou sendest forth thy Spirit, they are created: and Thou renewest the face of the earth'.

Thou renewest the face of the earth. Creation had a beginning. God was there. But He never stopped. And God is constantly present sustaining His universe and carrying on His work.

Pantheists are mistaken when they identify God with the universe, without acknowledging His transcendence and personality. But the first page of the Bible declares that God is above creation. He is more than creation. He is outside the universe. He is transcendent. The second page of the Bible states that God is immanent. That He is present in the earth. God thinks of man. He creates him. He loves him. He stoops to his level so that He may be known. He is interested in everything that happens to the human being. He intervenes in his life. The story of man is also subject to Jehovah who is the Lord of history.

In chapter 6, Jehovah gives a definite proof of His sovereignty, destroying the sinful race and saving Noah and his family. In verse 6 of this chapter it states that God 'repented' to have made man because of his falling into sin. And so we find that God himself shares the sorrow that mankind bears because of sin. God's heart (another indispensable anthropomorphism which makes us appreciate this truth dramatically) suffers, as man's heart suffers. God does not leave him long in his misfortune and pain.

Sin has plunged humanity into suffering and misery and God has been hurt as well as man. In this way the process of revelation is developed.

God transcendent and immanent. Infinitely far away and constantly present. Spirit as well as person. Elohim and Jehovah. These fundamental truths amongst others are found in these first chapters of Holy Scripture.

Correction of the Text

What would remain of these concepts if men corrected the text of the Bible? What if they were to 'demythologize' the Genesis account and to attempt to state the old ideas in modern terms? What if they were to

suppress the anthropomorphic element? What if they were to adjust the cosmivision of the Old Testament, making it conform with present knowledge?

In the first place, the conception we have of the universe is valid for today, and not for tomorrow. Cosmovision is always changing. As man penetrates a little more into the knowledge of the universe to which he belongs, he begins to see it in a different light. At present we are dominated by the idea of the inextricable complexity of the world. And as the investigator goes deeper, more complex does he find the panorama of the universe: more difficult to grasp, more elusive. The solution which might lead to the synthesis is not in sight. The analytical work in which we are engaged would seem to have disjointed everything. But we are sure that it will not always be so, and that new schema will fill the mind of man tomorrow.

On the other hand, the truths contained in the message of Revelation are unchanging. And they are offered to us in a narrative that has not lost any of its value, its vigour, its up-to-dateness and authority. Up-to-dateness and authority. These words express with precision what the Biblical narrative is. A narrative that goes on teaching us in an efficacious manner what God in His mercy has wished to have us know. That the Old Testament cosmology is quite different to the one we have today is logical. Our present day cosmology does not present the final solution. But it is the best one we have today.

The hagiographers had to think with the mind of their age, and their writings show the work of the Holy Spirit in their hearts, revealing the will of God which they were to deliver to other men, and their writings express the thought of God in terms they could understand. Thus, as Peter says in his Second Epistle: 'Holy men of God spake as they were moved by the Holy Spirit'.

The message and the form of the message remain the Word of God, valid for those far off days and through the ages until today. And we can add without any fear of being mistaken: 'The Word of the Lord endureth for ever'.

The How of God

The anthropomorphisms of Gen. 2 and 3 do not worry us in the least. We know perfectly that God has neither hands, nor feet, nor eyes, nor a human body. But this symbolism shows us a Person approaching man. It is not necessary either to be literal in the interpretation of the image of Jehovah as the potter making man out of mud, or as a gardener planting Paradise or walking in the garden in the cool of the evening.

The purpose of Genesis is to show us that God is behind everything. That He made the world. That He created the life. That He formed man and that He gave him an exceptional place and condition in creation, having made him in His image and likeness. That He cares for man, and

that His heart suffered when man fell into sin. That He is interested in the destiny of man and from the very beginning one can see Redemption taking place.

It is not the object of Genesis to show the *how* of God. We are not told *how* He made everything. It is not a matter of procedure. The *how* of God is something which belongs to His Omnipotence, something which we would never grasp with our limited understanding. The *how* of God is something which does not interest primarily the history of redemption. It is enough for us to know that God is the author and sustainer of everything.

By means of research man will try to penetrate a little into the *how* of creation. But of course, even in this age of fabulous discoveries he has only been able to interpret partial and insignificant aspects of the unfathomable mystery of the origin of things. All that man has discovered and knows is infinitesimal when compared to what remains to be known. Research has enabled him to scratch the surface. The realities of God are infinite, and the mind of man very limited. Shakespeare expresses the idea when he says: 'There are more things in Heaven and Earth, Horatio, than are dreamt of in our philosophy'. Nevertheless we are astounded with the creative capacity of the human being. Investigation presents very clear evidence of the glory or the image of God which man carries even though it has been spoiled and disfigured by sin.

But man *has* to surrender to the evidence of Holy Scripture. He has not one single possibility of entering into the depths of infinity. He *has* to be subject to what God wished to reveal about Himself. He *has* to go to the Bible as the only source where he may learn to know God, and where he will learn to know himself.

That is why we state that the Bible is still the Word of God in this age, as it was in the past, and will be in the future.

Perfection and Humiliation

For believers, the Bible is the glorious Word of God. From it issues a light which illumines the history of humanity and gives meaning to life. It is the Word of Revelation of God. It is key to the universe and to being. It is the Word of life and truth. The sublime Word which we receive in subjection.

But God has to adjust His Word to our limitation. In this sense the means utilized by the Holy Spirit in Genesis attain their saving purpose to perfection. They are the Word of God humbled in the human book, in the same way that Jesus Christ is the Eternal Word humbled in the form of a servant. In both cases, in the Bible and in the incarnate Word, God stoops to the level of man. Both represent the materialization of love and divine grace.

We say that the Bible is the humbled Word of God, because at the same time as it is the true Word of God, it is a book produced by man, a

book that has been subjected to all the contingencies of all books written by men.

There is no magic in its writing, or in its preservation or in its contents. The original documents have been lost. There is not one single autographed book. Even first copies have disappeared. There are many versions, and scholars during the last few centuries have had to study thousands of manuscripts and engage in a careful work selection to adjust the text more and more to the original.

There is no magic in its writing. God is the author, but 'holy men of God spake as they were moved by the Holy Spirit'. Those who spoke through its page were men. And the whole Bible vibrates with the humanity of its writers and actors while at the same time one hears clearly the message of revelation.

There is no magic in its preservation. It is quite evident that God had intervened so that the Book in all its integrity should remain after passing through milleniums of history. But He has done it in the first place through the miracle of the zealous care exercised by the people of Israel, and later through the Church. Paul asks in Romans 3: 'What advantage hath the Jews?' And the reply is 'much in every way, because that unto them were committed the oracles of God'. The Jews knew how to fulfil this ministry with faithfulness and sacrifice, handing over to the Church the Old Testament as we have in our Bible.

There is no magic in its contents. But the Word of God is 'quick, and powerful, and sharper than any two-edged sword, piercing even to the dividing asunder of soul and spirit, and of the joints and marrow, and is a discerner of the thoughts and intents of the heart' (Heb. 4:12). The Bible transforms the lives of men and women who hear its message and receive it, and the secret of this powerful operation of the Sacred Book does not reside in any magic influence, but in the fact that in its pages we discover the testimony of Jesus Christ, and that the Spirit of God uses this testimony and leads us to the Saviour.

Once Jesus was speaking to the Jews (Jn. 5:39) and He said to them: 'Search the Scriptures; for in them ye think ye have eternal life, and they are they which testify of me'. The Jews were quite right in believing that in the Scripture they would find eternal life. But most of them were not prepared to go to Jesus Christ to receive it. Nevertheless, in one single day, at Pentecost, 3000 Jews listened to the message of prophecy and its fulfilment in Jesus Christ, believed in Him and were saved.

Jesus as Christ was a perfect and complete Man as well as God, the Bible is perfectly a book produced by man, as well as being the authoritative Word of God. So that it is quite logical and consistent with this concept of the Bible for the authors to express themselves through their feelings and their emotions, as also in accordance with the knowledge of the time in which they lived. Medicine, astronomy, mathematics, natural science, industries and agriculture are primitive in the Bible. They are

always a faithful reflection of the diverse cultural stages or the process of civilization among the people of each period.

And this is precisely what gives its character of authenticity to all the Bible. All its pages show vividly the experiences of the people of God within the framework of each period in which they lived.

We also state that the Bible is the humbled Word of God because of the way in which man dares to treat it without being fulminated by the judgment of God. They have burned it like the wicked king Joacim. They have trodden it under foot. They have let it gather dust on library shelves. And today there are millions who despise it, destroy it or ignore it. Books have been written to ridicule or disparage the Bible. Whole lives have been devoted to attacking and offending it. In the name of criticism it has received some of its most sinister and destructive attacks. How then is it that all these sinners have not perished as a result of their temerity? With Jesus, the Word incarnate, men also did what they wished. And they succeeded because Jesus Christ was God humbled. In his marvellous grace he submitted to mockery, humiliation and to be abandoned.

The Bible is still the Word of God even if it is abandoned in the gutter, thrown to the bottom of a lake or left on a shelf. It is the Word of God when it is read and received in the heart through the work of the Holy Spirit, and when it is rejected. It is the Word of God when it falls on good earth, and when it falls by the wayside, among thorns or among stones. The attitude of man to it does not change the character of the Word.

We are filled with wonder at the manifestation of the mercy of God and of His humbling Himself, giving man His Word in the form of a book.

The Word of God for a New Age

And now let us return to the statement with which we began this paper: The Bible is still the authorized Word of God in this age of astounding scientific conquests.

As time passes and men are able to penetrate the secrets of the universe more deeply, we can approach this Word of God with new knowledge which allows us to appreciate new mysteries hitherto hidden in the pages of the Book.

We are convinced that science, far from vitiating the integrity of the Bible, illumines our minds so that we can better understand God's message.

The famous anthropologist, Teilhard de Chardin, stated in *Etudes*, (1921) 'We must avoid losing the slightest ray of light. Faith needs all truth'. He is referring to the contribution research has made in the work of discovering the origin of man. For the believer it is perfectly clear that man was created by God. But the investigators, the scientists, would like to know, if possible, how He created him. Much information is lacking, and the knowledge of the origin of man would seem to be beyond the reach of scientific methods. But as discoveries advance and the scientific

outlook becomes clearer, the scientists can approach Genesis and value the riches of the Biblical account in a new light.

We are in favour of science and research because they are activities of the human spirit in which man shows something of the glory of the image of God he carries. For modern man, research is a fascinating prospect. The sinner regenerated by the Holy Spirit, enlightened by the Spirit of God, possessing the mind of Christ, can make use of the information supplied by science, to obtain a more complete interpretation of revelation. 'Faith needs all truth'.

The truths science has discovered through history have always contributed to faith, though at times the process was long and painful.

We shall illustrate this briefly in closing.

The Christian world received a tremendous shaking when Kepler and Galileo finished with the classical cosmogony. Unbelievers attacked the Bible. These discoveries appeared to endanger faith. Far from being the centre of creation, the earth was merely an insignificant planet of a small solar system, which was a mere point in the galaxy of the Milky Way, which is only one among the thousands of galaxies which people the universe. Man then is an insignificant mote instead of being the object and centre of God's creation.

The Christian world shook once more when man was considered as a being who belonged to the zoological scale and when he was classified zoologically in Linnaeus's systematics. And man appeared to receive another terrible blow to this privilege of being a higher creation when Freud discovered the abyss of the unconscious ego. Astronomy, biology and psychology would seem successively to have taken away the place the Bible gave man at the head of creation, as Lord over all the earth.

But the size of the world in the universe has lost all its importance. The universe of the infinitely small has been discovered and man is in the midst of these immeasurable abysses. He ventures to explore the infinitely great and the incredibly minute. He can man space ships and penetrate into the intimacy of the atom and free tremendous energy. The statement the Bible makes, that man is the lord of the earth, is more evident than ever it was.

Biologically, with his privileged brain, his place is unique among all the beings of the zoological scale. The Old Testament emphasizes repeatedly the identity of the nature of man and of animals. And in Gen. 1 man is the last of the beings which appear on the earth. On the other hand, 'thinking' constitutes a higher world, the 'noosphere' as Teilhard de Chardin calls it, in the world of man, which is the supreme expression of life.

Thus research shows that man emerges from the torrent of life, from the bowels of the earth of which he forms part, that he is deeply identified with the world, that he is crown of creation.

This is precisely what is taught in the first chapters of Genesis.

CREATION AND EVOLUTION

by D. GARETH JONES

The world in which we live can have experienced few tragedies so great as the conflict between religion and science. The contrast between the Puritan scientists of the seventeenth century and the scientists and churchmen involved in the Darwinian controversy of the nineteenth century is fundamental, and marks a disastrous revolution in the approach to nature of both Christians and non-Christians. Whereas the Puritans regarded science as an ally of true religion¹, most of those engaged in the first flurry of the evolution débâcle were ranged into opposing camps depending upon whether they were scientists, evolutionists and unbelievers, or theologians and anti-evolutionists. The legacy of this radically changed attitude has remained with us and even today is a determinative influence in much of our religious and scientific life. The reasons for the change are complex, and will only partly concern us here.

Whatever else may be true of the evolutionary controversy, one point is clear—emotional and philosophical considerations have predominated, at the expense of theological and scientific principles. To many of the scientists, the theory of evolution was soon transformed into the dogma of evolutionism, thereby providing them with a satisfying philosophical alternative to the doctrine of special creation. To such, all reality is evolution². Not only is it an entirely natural process, but it is an all-inclusive process, containing within itself the potential for explaining the whole of the cosmos. Generally, such a system dispenses with either the need for, or the relevance of, the supernatural³; or if a god is allowed, it is a god of evolution⁴. At the other extreme were the hyper-traditionalists⁵ for whom the literal interpretation of the early chapters of Genesis, in the context of a static world-view, completely ruled out the possibility of change in living forms. Such a position could not be affected by science, the findings of which were irrelevant except in so far as they were branded as 'atheistic' and 'of the devil'. The modern representatives of this school of thought may allow for limited change, perhaps sometimes speciation, but their views on evolution itself are unchanged⁶.

On one point both positions are agreed—evolution is a philosophical system. To the one, it affirms the freedom of nature and the dignity of man⁷; to the other, it is a denial of God as God⁸. Unfortunately the way in which the term 'evolution' is used is invariably not mentioned, so that no distinction is made between its scientific and philosophical connotations. To fail to distinguish between observation and hypothesis, limited generalization and broad generalization in science is simply misleading, especially when the end result is presented as an incontrovertible law with universal applicability. On the other side, it is not unduly helpful to ignore the legitimate scientific aspects of evolution because these do not fit neatly into a particular interpretation of the Bible.

Before proceeding further it is essential to distinguish between the different usages of the term 'evolution'. Kerkut⁹ recognizes: (a) the special theory of evolution, according to which many living animals can be observed, over the course of time, to undergo changes so that new species are formed, and (b) the general theory of evolution, which asserts that all the living forms in the world have arisen from a single source which itself came from an inorganic form. In that the special theory is scientifically verifiable, it cannot be rejected; as it involves the formation of new species it is correctly classed as evolution¹⁰. The general theory involves a number of assumptions, e.g. living organisms have been derived from non-living matter, life originated only once and all living forms are genetically related. Some of these assumptions are quite reasonable, and in the present state of our knowledge form a useful basis for our thinking about the possible relationship of living forms to each other, and about the possible origin of life. However by their very nature, certain of them will never be capable of rigorous scientific proof. As an illustration of this, it may be possible at some time in the future to bring into being in the laboratory a self-reproducing living organism from such essential compounds as amino acids. Such an achievement would demonstrate that a similar event could have occurred in the past, but it would not prove it.

The reliance we place upon these assumptions depends on our philosophical presuppositions. For the non-Christian they are essential if he is to have a coherent and unified picture of the world. By contrast, a Christian with a biblically-orientated world-view is free to accept or reject such assumptions¹¹. I do not believe that the possibility of his acceptance of these assumptions involves him in an anti-Christian philosophy¹². The controlling principle is the scientific evidence.

This distinction between the scientific and philosophical approaches to evolution is a vital one for the Christian. A scientific hypothesis, such as the general theory of evolution, is a probability statement¹³, in that it interprets the whole of nature in terms of limited evidence. Further research will determine the accuracy of this interpretation. If it is seriously inaccurate it will have to be modified or even discarded. The conversion of this scientific hypothesis into a materialistic philosophy opposed to Christianity is totally different. The claim that 'man has risen, not fallen'¹⁴ is the outcome of an ethical judgment infected into evolutionary thinking from outside. In the same way, the discarding of an external purpose in evolution¹⁵ and the belief that man's destiny is to be the agent of the world process of evolution¹⁶ have no scientific foundation.

From the above, the detailed mechanism of biological evolution is of no concern to the Christian as a Christian, and I will not discuss these issues. However anti-evolutionists have made much of difficulties in the theory of evolution. Their criticisms cover a wide field, and include the fact that large mutations are generally deleterious, the lack of intermediate forms in the fossil record, the apparent contradiction between the entropy of the second law of thermodynamics and evolution, and the inconsistency of radioactive dating. Some of the criticisms, such as the lack of intermediate

forms, are valid and are generally recognized, others, such as the inconsistency of all forms of radioactive dating, are grossly exaggerated.

These criticisms call for a number of comments. First, that there are weaknesses in the biological theory cannot be denied. However, as much should be asked of this theory as is asked of other scientific theories, and not more. The rejection, as unscientific, of anything which is not directly observable entails a view of science in which facts alone are valid. A science devoid of imagination and hypothesis would be sterile and would hardly constitute science in the modern sense. And yet the 'science-equals-facts' argument is still met today in anti-evolutionist circles¹⁷.

Secondly, to expose the weaknesses of one theory in no way provides a workable scientific alternative to evolution. Christians, like non-Christians, cannot live in a vacuum. A positive alternative to the evolutionary theory, at the scientific level, must be provided and far too many anti-evolutionists have not even attempted this. From time to time schemes based on the universality of the Flood have been suggested by way of complete contrast to geological uniformitarianism and evolution¹⁸. On the whole they have proved unsatisfactory. The most detailed forms of scientific creationism¹⁹ which have been proposed incorporate certain aspects of the biological theory of evolution.

We are now in a position to consider in some detail a number of possible interpretations of the first two chapters of Genesis, in the light of the previous discussion of evolution.

In the first place, any interpretation of these chapters must be valid exegetically. Starting from the premise that the Bible in its entirety is the inspired Word of God, we are obliged to try and discover what is the purpose of the passage in question, and what it is that God would have us learn from it. We can be satisfied with nothing less than this.

In the second place, our understanding of some of the details of Genesis one and two has undoubtedly increased as a result of our increased understanding of developmental processes. I cannot therefore follow those who maintain that the interpretation of these chapters must be carried out in complete isolation from modern science. I do not believe this is a realistic assessment of our situation.

The most general principle to be learned from the beginning of Genesis is that God is the Creator of the universe and of all in it. As one modern confession of faith phrases it: 'In the beginning it pleased God, for the display of His glory, power, wisdom and goodness, to create out of nothing the heavens and the earth, and all that is in them'.²⁰ In other words, the creation was a free act of God, it marked the temporal beginning of the universe and pre-existing materials were not used. These ideas have historically formed the concept of *creatio ex nihilo*. Furthermore, we can consider the universe in general as 'good' because it is the production of God's command, while humanity in particular is 'very good' because made after the image of God himself²¹.

Does Genesis present an historical account of the creation? In other words, did the events recorded in the first chapters of Genesis actually take place? The reading of the chapters themselves would appear to indicate that they did. This impression is strengthened by a number of New Testament passages which look upon certain events of the creative period as genuinely historical²². Ridderbos²³ would prefer not to apply the word 'history' to Genesis one because the historiography of the Bible differs in some respects from modern historiography, and in addition it is neither an eyewitness account nor the fruit of historical investigation. At the same time, he does not doubt its factual nature.

What is of importance is the distinction between its factual reliability, and mythology or untrustworthy tradition. This does not mean that it is purporting to give accurate scientific detail in the language and conceptual framework of the twentieth century, neither does it of necessity mean that it is giving a chronological account of what happened. Its arrangement may be schematic. Yet it does insist that the events took place, and that the account we have of them is meaningful and relevant, especially with respect to salvation²⁴.

One of the key problems in the interpretation of Genesis one is the definition of *yom*, translated 'day'. The word *yom* is used in three different ways in Genesis 1:1 - 2:4. In Genesis 2:4 it is employed to embrace all the 'days' of Genesis one. From this, and bearing in mind the numerous other meanings which *yom* has in different places in the Old Testament, it has been argued that it is impossible to give it any one meaning in Genesis one²⁵. Nevertheless a strong case can be made out for its meaning a period of approximately twenty-four hours—for the last three days at least, as opposed to a period of time lasting millions of years. The arguments put forward in favour of this view by Surburg²⁶ include: (a) most Hebrew dictionaries do not recognize the interpretation of *yom* as a period of time lasting millions of years; (b) when *yom* in the Old Testament is associated with a definite numeral, solar days are meant; (c) the six days in Genesis one have light and dark portions, and this agrees with the method of recording time in the Mosaic period.

Young²⁷ refuses to commit himself on the actual length of the days, beyond stating that they are periods of time which can legitimately be called days. The first three days are not solar days. Lever²⁸ considers the days are not to be formulated on a physical basis of time, and so cannot imply periods of millions of years. Ridderbos²⁹ seems to view them as real days, although of greater importance to him is the way in which they constitute an order, in the sense that Genesis tells us first of all that God has created everything. In Spanner's³⁰ view they represent elements, not of time, but of eternity, their actual length being irrelevant.

It is doubtful then whether the 'days' of Genesis one can be regarded as long periods of time.

The next issue to be faced is whether or not the order of events as recorded in Genesis one is intended to be taken chronologically. Closely

related to this is the same question concerning Genesis two.

A schematic, non-chronological view or, as it is sometimes called, the 'framework' hypothesis was ably supported by Noordtzij in a book published in 1924. More recently it has had another champion in the person of Ridderbos³¹. In its turn it has been strongly criticized by Aalders and Young³².

The essence of this hypothesis is that, in order to impress upon our minds the fact that God is Creator of all that exists, the author speaks of eight divine acts of creation. These he distributes over six days, in such a way that God worked for six days and rested on the seventh. Although we are not told in what succession everything has been created, this does not mean that the order is arbitrary.

The arguments adduced in support of this position are firstly, the Israelite was accustomed to work for six days and then to rest for one day. The creative activity of God is described in similar terms because this was the only way to speak about something beyond human thoughts and words. The language, like much other language in Genesis one and two is anthropomorphic. Secondly, the whole of Genesis one is of a schematic nature. The six days fall into two groups of three days each. There is an approximate parallelism between the first and fourth, second and fifth, and third and sixth days. Furthermore, the eight creative acts are distributed into two groups of four each. Thirdly, as mentioned earlier biblical historiography differs from modern historiography, in that the biblical author frequently groups historical facts artificially and deviates from the chronological order without stating his intentions explicitly. Examples of this can be found in the contrast between Genesis one and two, and in the contrast between the temptation narratives of Matthew four and Luke four.

The main objection to this theory stems from the fourth commandment³³. However, in terms of this viewpoint, God did create in six days and rested on the seventh. His example holds as powerfully as with a chronological position.

Those who resolutely affirm that Genesis one speaks chronologically, have to concede that Genesis two speaks non-chronologically³⁴. The exegetical grounds for treating the two chapters differently are not convincing.

I would tentatively propose therefore that the first two chapters of Genesis be treated non-chronologically. This position has its exegetical difficulties, but so does a chronological scheme.

A non-chronological scheme in no way denies the historicity of the account. Its emphasis is upon the purposes of God in creation³⁵, rather than upon the details of creation. Neither does it suggest that the author deliberately placed the events non-chronologically. We have no evidence

that he knew the chronological sequence. What was important was the schematic arrangement.

The false identification of the phrase 'after its kind' with the concept of the 'fixity of species'³⁶ engendered many difficulties for Christians, but fortunately is now virtually a historical curiosity. Many creationists allow for variation of living types within the limits set by the 'kinds' of Genesis. The 'kinds' are variously considered as corresponding to the 'phyla', 'orders' etc. of taxonomy. The first members of such a group would have come into being as a result of the creative activity of God. Natural processes would have been responsible for development within the group. In contrast to this, theistic evolution teaches creation from within, and recognizes a continuous line from the original cells to man³⁷.

The heart of the anti-evolutionist position lies, not in an impregnable interpretation of the first two chapters of Genesis, but in an interpretation of these chapters in terms of the idea of constancy. Instead of being of scriptural origin, this idea derives from Greek-pagan thinking³⁸, but has become such an integral part of our thought that to question it—as one must do in light of scientific data—is regarded as tantamount to questioning Scripture itself.

Theistic evolution, on the other hand, recognizes no limits to possible change. It accepts the current general theory of evolution, with the proviso that this is the manner in which God has created.

In my view neither of these positions accounts satisfactorily for both the scientific and Biblical evidence. The scientific evidence cannot be interpreted in Biblical terms; neither can the Biblical position be dictated to by the scientific fashion of the day. As I have attempted to show, each must be viewed primarily in terms of its own interpretative criteria. However I cannot go as far as some and separate completely the two realms. Neither can I support a supranaturalistic view by which God intervenes from time to time in his creation. This position rests on the assumption that nature is in some degree independent of God. Instead we must hold that nature is nothing in itself, but that like everything else is utterly dependent upon God.

Difficulties may arise over the points of intersection between the Bible and science, e.g. the interpretation of 'after its kind'. These should not disillusion us, as in the present state of our knowledge they are to be expected.

The difference between a Christian and a non-Christian view of nature lies not in the sphere of the data, investigations or hypotheses, but in their respective philosophies. Whereas the non-Christian limits his horizon to the material world, the Christian's attention is directed towards God as Creator and Sustainer of the world, and his desire is to discover more about God's purposes in the world.

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32. For a summary of these positions and for a detailed discussion of their merits see: Young, op. cit., 43 - 105.
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35. Cf. D. F. Payne, *Genesis One Reconsidered*, (Tyndale Press) 1964, 19.
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THE NATURE OF MAN

by PAUL R. HYLAND

Introductory Note

Man is the subject of study by many scientists including anthropologists, sociologists, psychologists and physiologists. It is as a biologist and a Christian that I consider him. The subject of this paper is therefore the view of man as a product of the evolutionary process, and as a being created by and for God. I have not discussed the first chapters of Genesis because these are the subject of another article here.

Most of the points I have made could be expanded at great length; particularly various aspects of Teilhard de Chardin's Work. I leave it to the reader to make many of the inferences that, given space, I should have liked to have developed.

A Drop in the Cosmic Ocean

It is estimated that there are five billion Milky Ways. Ours has dimensions of one hundred thousand light years. On one edge of this vast complex of one hundred billion stars, lies one star, the sun. The earth is one of seven planets circling it. For the last million years man is believed to have inhabited this earth. The cosmos has probably existed for six or ten billion years.

'What is man that You even consider him?'

The Mistaken Conflict

Christendom has well digested the fact that, temporally and spatially, the earth is an insignificant speck; this fact is a commonplace and is not questioned. But it was not always so. For in 1543 the Polish churchman Copernicus tentatively put forward the thesis, in *De Revolutionibus Orbium Coelestium*, that the earth was not the centre of the cosmos.

In the early seventeenth century Galileo, with support from Tycho Brahe's astronomical observations, preached Copernicus's findings, and was pronounced an heretic. Not only did he upset the traditional Aristotelian view; he had also transgressed the bounds of revelation, for 'the world stands firm, never to be moved' (1 Chron. 16:30. RSV) and 'the world is established; it shall never be moved;' (Ps. 93:1; Ps.96:10. RSV). No further authority was required to reassure all good churchmen that it could not possibly be the case that the world swirled, with six other planets, around the sun.

The story of Galileo and the Inquisition should be enough to assure us of the dangers of rash 'religious' dogmatism. The black reputation the

Church deserves and gets by such unguarded assurance of its own infallibility, is clearly very pernicious; it is detrimental to the Church's witness for it can no longer demand even the respect of men of integrity. However, Christians do not seem to have learnt their lesson as the story of Darwin's theory shows.

Man - Ape or Angel?

History certainly repeated itself, and Charles Darwin, a theological student, must have felt like a latter day Galileo after the reception of his ideas by the Church.

He was by no means the first to put forward a theory of evolution. The Greek thinker Anaximander (born c. 600 B.C.) believed in a form of animal evolution and Empedocles (c. 440 B.C.) believed in the survival of the fittest in plants and animals; these theories were fantastic for the most part and almost wholly non-empirical. But in 1747 the French biologist Buffon put the earth's age at seventy five thousand years (in contrast to Ussher's estimate 'based' on biblical genealogy), and fossils began to be recognized as early plants and animals. It was suggested that these had been put there either by the Devil, to trick man, or by God, to test man's faith.

From a study of fossils and living creatures Lamarck derived his theory of evolution which was published in 1809; he maintained that living creatures developed their structure to suit their environment, and passed these acquired characteristics on to the next generation. This is now known to be false, but the mechanism of change could not begin to be understood until the importance of mutations was realised.

In 1844 Robert Chambers, a devout theist, had published anonymously a work entitled *The Vestiges of Creation* in which he expounded his idea of the evolution of man. Darwin was the first to provide real solid empirical evidence for the theory, resulting from his voyage around the world in the Beagle, on which he gathered much information concerning adaptation to the environment of endemic species of plants and animals, and colonisation of new habitats resulting from, and producing further, adaptations. These facts he and Alfred Russell Wallace presented to the Linnean Society in July of 1858 and Darwin's *Origin of Species* was published in 1859.

His theory was based on the observation of the phenotype (the external manifestation of genetic material in terms of easily assessable characteristics [roughly]); unknown to him work was already being done by Gregor Mendel, an Austrian monk, on the genotype (contained as 'genes' in what we now know as the chromosomes) and its resultant phenotype. This brilliant work was published in 1899 but was not discovered until

early this century when its importance was understood. It formed the basis for the science of genetics.

The work subsequently done on the palaeontological, morphological, physiological, ecological and genetical aspects of evolution fills many books and papers. This is not the place to attempt even to outline it. Suffice it to say that characters, represented in each cell of the body, can now be mapped on the chromosomes and their position in relation to other genes ascertained. Because one can see when genes (and intra-genic elements) cross over from one chromosome to another, usually preceding the sexual process, we understand how mutations can occur, in terms of new combinations of genetics material, giving rise to small changes in character which may be beneficial or harmful to the individual, and hence species. If beneficial the individual survives and produces progeny. Over periods of millions of years entirely new species and genera arise, colonising almost all the niches available in the world. The 'missing links' are necessarily relatively small in numbers, and it is remarkable how many have been found. (For an answer to popular ridicule on this topic, see *The Phenomenon of Man* by Pierre Teilhard de Chardin, chapter 2, part 2, section C, particularly 'Suppression of the peduncles' page 133 in the Fontana edition, 1965).

Evolutionary theory has been tested so successfully as to seem irrefutable, though of course it is not as crude as the 'survival of the fittest', 'struggle for existence' picture given above.

However, let us return to the reaction to Darwin's work. Bishop Samuel Wilberforce led the Christian offensive at an infamous meeting of the British Association in 1860. I cannot do better than quote Joseph V. Kopp: 'He (Wilberforce) conducted the attack against Darwin with a brilliance of rhetoric quite unhampered by any knowledge of the facts. Neither could this prince of the Church resist the temptation of making fun of the matter and enquiring after his opponent's simian ancestors'. Thus Christians were led into an unconsidered antagonism, while in 1859 Friedrich Engels wrote to Karl Marx 'Darwin . . . is absolutely splendid. One bastion of theology was still unbreached. Now it has fallen'. This claim for the implications of the theory was as extravagant and unfounded as the Christians' antagonism to them, but Marx replied 'this is the book that will provide the natural history basis for our work'. Again quoting Kopp—'Such was the unfortunate début of one of the greatest and most vital discoveries in the history of mankind'.

This rejection by the Church and acceptance by the Materialists created an unnecessary dichotomy of opinion that has done enormous damage during the last century in discrediting the gospel of Christ in the eyes of the world.

Is man an ape or an angel? Does he derive from the animals or is he a special creation? Perhaps these are the wrong questions to ask anyway.

Will evolutionary theory be assimilated into Christian thought as Galileo's heliocentric theory was? For some it already has been, but for others there is a conflict.

Scientific and Religious

Some will reject all human wisdom because it is foolishness. To the outsider the religious category is foolishness 'but to us who are being saved it is the power of God'. (1 Cor. 1:18. RSV). I suggest that Paul, in the following verses, was thinking of the influential philosophies of his time that clashed with Christian doctrine. The empirical scientist as we know him did not exist. I also suggest that where knowledge about the world can be reconciled with Christian thought there is no reason to reject it: we accept innumerable facts about the world in our everyday life, why then should we reject them for 'religious' reasons when the scientist presents them to us.

It is of course never possible to verify a theory in a logically rigorous fashion, only to falsify it. Karl Popper holds that the strength of a theory is proportional to its potential falsifiability (i.e. the number of propositions deducible from the theory which may be observed, directly or indirectly, to be true or false) providing that it is not falsified. The greater the number of deduced propositions that are found to be true, the less the likelihood of such falsification, and the greater the strength of the theory. Evolutionary theory is potentially highly falsifiable, but because the weight of confirmation is so great and so diverse it is strongly upheld. However it cannot, by its nature, be regarded as truth in the same way as revealed truth, *epistēmē*, for it is human opinion, *doxa*.

Is this scientific *doxa* contradictory to, or compatible with, *epistēmē*? In Galileo's case the Inquisition were sure it was contradictory. Wilberforce *et al* were sure that Darwin was wrong. A matter of integrity was involved and it was the churchmen's integrity that was prejudiced. God has not given us powers of observation and reasoning to deceive ourselves, and as Christians we must accept scientific honesty.

Good cases have often been put forward for the compatibility of the Christian and scientific views, and hence the biblical and scientific views of man. They are not merely compatible, they present two different but *complementary* aspects of him. Briefly, it has been suggested that science can explain the 'how' of things, and Christianity the 'why'. This is unsatisfactory in some respects, but broadly it gives the kind of picture we want. Science gives us a phenomenology but not a teleology. We must not think in terms of a 'God of the gaps': we do not look for breaks in natural processes (including evolution) because all 'natural' processes are supernatural. In Christ all things cohere; God upholds the universe continually. This is a very real expression of God's immanence. Miracles are natural in this sense, but to us they appear 'supernatural'.

Our traditional natural/supernatural outlook is more an outcome of the Christian Platonist and Thomist views, deriving from the essence/appearance dichotomy developed in Plato's theory of Forms. There is a dichotomy, but not such a simple one. The biblical view of man is a tripartite one—body, soul and spirit—but our ideas have been conditioned to thinking in simple spirit/matter terms.

Paul Tillich writes 'Life as spirit transcends the duality of mind and body. It also transcends the triplicity of body, soul and mind, in which the soul is actual life power and mind and body are its functions. Life as spirit is the life of the soul . . . Spirit is not a part, nor is it a special function. It is the all-embracing function in which all the elements of the structure of being participate. Life as spirit can be found by man only in man, for only in him is the structure of being completely realised'.

When we think of God as immanent in creation, the whole aspect of evolutionary theory changes. The hand of God is at work in creation. Spirit spells the unity of the ontological elements of life and its *telos*. This *telos* expresses the aim of life fulfilling itself in spirit. Teilhard de Chardin sees this clearly, and gives his account of evolution towards *homo sapiens* in his remarkable book, *The Phenomenon of Man*. He believes that science has never, up till now, troubled to look at the world except from *without*. He firmly believes, and his book is the justification of the belief, that the scientific and Christian interpretations can be united in an account 'in which the internal aspect of things as well as the external aspect of the world will be taken into account'. Alongside the process of orthogenesis, the directional tendency to complication, we follow also the evolution of the *within* as consciousness. 'Refracted rearwards along the course of evolution, consciousness displays itself qualitatively as a spectrum of shifting shades whose lower terms are lost in the night'. The *within* of things is the sufficient logical explanation of the cosmic phenomenon. There is a centripetal evolution of things in terms of cosmogenesis, biogenesis, noogenesis and finally Christogenesis. The attraction causing this centripetal movement is Love, and point Omega is not only the cause, but the goal of it. (He admitted that this view seemed too positive. He maintained that when the positive aspect was understood, the negative aspect [the Fall, sin etc.] would fall into place. The incarnation and the cross are central in his thought, but there are apparent defects on some doctrinal points; he himself was aware of inevitable shortcomings in such a vast synthesis coming from the mind of one man. Nevertheless the total vision remains).

In man, consciousness finds a fuller expression than ever before, in powers of reflection and purposiveness. These qualities of man's soul involve the possibility of its life or death in terms of the fulfilment or destruction of God-consciousness, the spirit of man.

Revelation makes sense in the context of the *within*, which can be seen, on this view, to correspond to the foolishness of the gospel. (Talking in teleological terms was described denigratingly by one zoologist, as

exemplifying the 'Teilhard de Chardin syndrome'.) Faith is required for the absurd leap that a man must make who accepts this foolishness. Belief is the active expression of the absurdity of Christianity, and Christ is its vindication.

Finally let us consider Romans 8:19 - 24. (RSV). 'For the creation waits with eager longing for the revealing of the sons of God; for the creation was subject to futility, not of its own will but by the will of him who subjected it in hope; because the creation itself will be set free from its bondage to decay and obtain the glorious liberty of the children of God. We know that the whole creation has been groaning in travail together until now; and not only the creation, but we ourselves, who have the first fruits of the Spirit, groan inwardly as we wait for adoption as sons, the redemption of our bodies. For in this hope were we saved'.

ARTICLE REVIEW

PATTERNS OF SECTARIANISM

ed. by BRYAN R. WILSON (Heinemann 63/- 416 pp.)

This excellently produced volume which is sub-titled *Organisation and Ideology in Social and Religious Movements*, reflects the current sociological mania but in a somewhat unexpected field. It consists of a series of papers, four of which are by the editor, relating to a variety of small religious movements ranging from the Salvation Army to British Israelism. Most of the authors have participated in the All Souls seminar in the Sociology of Religion, but the sociological content in the essays is very variable. Some are really excursions into social history with few sociological deductions or generalisations as such, others are more theoretical and attempt to discover general types and categories into which the various sectarian phenomena can be put. Some of this can prove tedious reading for the uninitiated layman, and from time to time one wonders whether jargon like 'behavioural correlates', 'ideological commitment', and 'endogamous injunctions' is absolutely necessary. After a while however, the effect wears off, and one realizes that the phrases are in fact, space savers.

Wilson's introductory analysis is useful and stimulating. He traces four broad categories of sect, *conversionist* (e.g. Salvation Army, Pentecostal etc.) *adventist* or *revolutionist* (e.g. Jehovah's Witnesses, Christadelphians) *introversionist* or *pietist* (e.g. certain Holiness movements,

some Quakers, Exclusive Brethren) and *Gnostic* where the emphasis is on individual self-realization and mysticism (e.g. Christian Science, Koreshanity). The weakness of course in such categorisation is that many groupings are a mixture of more than one type. Wilson goes further than this however, and places this analysis within the context of a broader distinction between sect and denomination. This latter division is nothing new, but is crucial to much of Wilson's arguments. He characterises sect membership as involving personal commitment and indeed requiring certain qualifications (affirmation of conversion experience, knowledge of doctrine, ethnic standing etc.) which will be expressed in active participation and subjection to the group's discipline. A denomination on the other hand, does not impose traditional prerequisites of entry and membership is frequently nominal; discipline is rarely (if ever) exercised and the standards and values of the prevailing culture and conventional morality are accepted, whereas the sect emphasises its own peculiar standards of life. This is expanded quite fully and the varying modes of organisation and internal relationships are discussed.

This goes a long way to clarifying what has often been a source of confusion in the observations of earlier writers like Niebuhr, who usually were writing of *conversionist* sects rather than all sects. For instance when Niebuhr maintained that a sect became a denomination with the coming of the second generation or rapidly declined being unable to gain the allegiance of its members' children, he was not thinking of the introversionist and adventist sects which far from becoming denominations with nominal membership, retain their younger generation by a code of marriage rules and other regulations which maintain their sect identity.

The essays which follow vary in their approach considerably. R. Robertson writing on the Salvation Army's persistence as a sect is informative and instructive. He notes the change from a family power structure to a constitutional leadership (finally settled by the Salvation Army Act in 1931) and emphasises the conflict between acceptance by society on account of the Army's welfare work, and rejection and persecution over issues like uniform. He concludes that the strands within the movement make it both an established sect *and* 'in some respects an *order* within Anglicanism'. (p. 105) This last suggestion is very interesting to at least one reader as it is strikingly similar to a suggestion made to would-be-separatist-Brethren in 1831 by John Synge in a letter to Captain Percy Hall.

There are other essays of similar interest. T. Rennie Warburton writes on the Emmanuel Holiness Church, and the editor reprints a paper on the role conflicts of the Pentecostal Minister. The latter is most instructive as it in-points the tension, for the salaried minister, between *acting* as the guardian of a basically sectarian ethic, and *being* a distinctive feature in the process whereby the sect is rapidly becoming a denomination.

Two essays by Mrs. Elizabeth Isichei deal with the development of the Society of Friends from an introversionist sect to a denomination, and

the organization of the Society in the context of the business meetings held in the 1850's. Here again there are notable cases of denominational and sectarian thinking running in parallel. The failure of the old 'Quaker democracy' in recent years and its replacement by a professional secretariat is seen as evidence of the failure of an essentially sectarian ideal by which membership implies *active* membership. Of interest too is the discussion of the Quaker attitude to wealth. 'Either the prosperous Quaker rebelled against the restrictions of the sect, especially its restraints on consumption, or he welcomed them as a bulwark against the burden of guilt which his ownership of wealth created . . . By obeying the strict rules of the sect the insecure and guilt-ridden individual won the esteem and support of his co-religionists'. (p. 181) Perhaps it is unnecessary to add that many of the writers' observations need not be confined to the actual groups which they are discussing!

John Wilson offers a revealing outline of the origins and development of British Israelism. As a non-sectarian movement it comes in quite a different category from the rest, but its curiously semi-political and semi-evangelical ideal is intriguing, and the process by which the movement was rescued from the whim of an individual and given an organisational structure is interesting as it underlines the crucial role of the publishing house. Along with this essay in non-sectarian structures, there is a paper by Mrs. Susan Budd on the system of the Humanist Societies.

Of more particular interest to readers of CBRFJ will be the 129 pages in the section on introversionist sects, consisting of three essays relating to Brethren developments. The first is a brief, almost entirely historical outline by the late Dr. Peter Embley on Brethren History before 1850. The author, who was killed in a tragic road accident in July 1967 obtained his doctorate of philosophy at Cambridge with a thesis on this subject, and therefore his paper is of great importance. The second essay is an interesting study in the origins and social structure of the *Needed Truth* movement by the editor and Gordon Willis. This enlarges fairly thoroughly on the outline made by Mr. C. A. Oxley, in CBRFJ 4 (April 1964) pp. 21-32. The last of the Brethren studies is a lengthy paper by the editor on developments among exclusive brethren right up to the present day.

A number of useful points emerge. At times it seems that theology has been adapted with particular community needs in mind. Thus Wilson makes the 'necessarily speculative' suggestion that the denial of the equality of the Father and the Son, in Taylor's ministry of 1929, reflects 'the internal problems of the socialisation of a new generation in which the younger men were now increasingly likely to challenge the authority of their fathers' (p. 311). He adds that in the 1930's Taylor at various times 'discussed the books in the Bible in which the 'paternal thought' was presented'. (p. 312) This bears on the suggestion that the strength of the movement must exist in its 'familial relationships' and that these 'find expression in the central myth of the movement and are enacted in the principal liturgical performance' namely the Lord's Supper. (p. 320) This is an interesting explanation of the increasing tendency among

exclusives to elaborate on a peculiarly complicated scheme of relationships within the Deity. Christ the firstborn among brethren emphasises loyalty and comradeship. Christ the bridegroom coming for his bride, and Christ the faithful and obedient son, these both are interpreted in detail in the context of the Lord's Supper to suggest parallels existing within the exclusive community.

The distinctive role of the family is characterised by the fact that wives are encouraged to be house-proud, and that 'attention can be lavished' on cars (p. 328)—in each case the interest is permissible because it strengthens the family unit. Wilson also notes the crucial influence of 'a close network of kinship' established by continuous inter-marriage. (p. 330) This is of peculiar significance as 'in some ways the [Exclusive] Brethren begin to resemble not only an endogamous caste, but very much the religiously sanctified and purified ethnic group—a preserved and sacred tribe'. (p. 331) Thus the similarities between the sect and the aborigines which Durkheim investigated are rather pointed. The assembly appears as a form of the Deity and worship of God has ultimately become worship of the community.

We have reserved comment on Dr. Embley's *The Early Developments of the Plymouth Brethren* for the end of this review deliberately. Anyone who knew Peter Embley will recall the energy and enthusiasm which would suddenly and unpredictably bubble up and find expression in tremendous industry applied to any project that he had in hand. A part of this can be seen here. He uncovered a number of new sources of original material, and in this essay he refers to several of them. He used the Religious Census returns of 1851 at the Home Office; a collection of tracts relating to Andrew Jukes at the Hull Central Library; the Sibthorpe collection at Redruth; papers in the Devon County Archives. These all add to our knowledge of what has only recently become a much better documented field of study.

On top of this Dr. Embley scoured some of the local Devon newspapers to discover what the early brethren were doing in the 1830's. Perhaps it will come as a surprise to some that Captain Percy Hall was not only preaching in the open-air, to the disgust of the editor of the *Plymouth and Devonport Weekly Journal*, but also collaborating in March 1832 with G. V. Wigram in running a 'Temperance Clubroom' in Southside Street, at Plymouth, where 'tea, cocoa, rolls and butter were provided at cost price for the poor and free to the penniless, each morning and evening from 7 to 9'. (p. 219) One more nail—and it is hardly likely to be the last—is driven into the coffin of the 'no-philanthropy' legend.

A review of this sort can hardly do more than mention one or two points of interest raised in a book like this. There is plenty more here to interest CBRFJ readers. Three guineas is perhaps a bit expensive, but the book is well produced except for a few misprints. We have observed the following errors of fact:—

- p. 221 Darby visited Oxford in May not June 1830.
- p. 225 n. 1 (*see note 14*) should read (*see note 2 page 221*).
- pp. 245 and 289 1836 should read 1839. Darby was not in Switzerland in 1836 and Groves's pamphlet gives the date as 1839.
- p. 296 n. 1 and in various other places. Noel's Christian name was Napoleon though here it is consistently given as Napoleon.

It is to be hoped that Brethren will consider this book carefully. Much of the comments have a wider significance than the one they have in the context here. Whether we are a sect or a denomination is an interesting question, as also is the question: 'which do we feel we ought to be'? Just because Open Brethren are not dealt with here at any length it should not be assumed that the writers do not regard them as a sect. Jehovah's Witnesses, Mormons, and Christadelphians are not dealt with either—one wishes that they had been. Are Open Brethren anxious to make their membership active membership rather than nominal? Do they want to exercise excommunicative discipline? One hopes that they are conversionist rather than introversionist, but what about the endogamous tendencies that have coloured the movement from the first? Is this a substitute for effective evangelism? A large number of questions are raised here about minority Christian groups and it is to be hoped that CBRF members will do some thinking about these and allied issues.

LINCOLN.

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