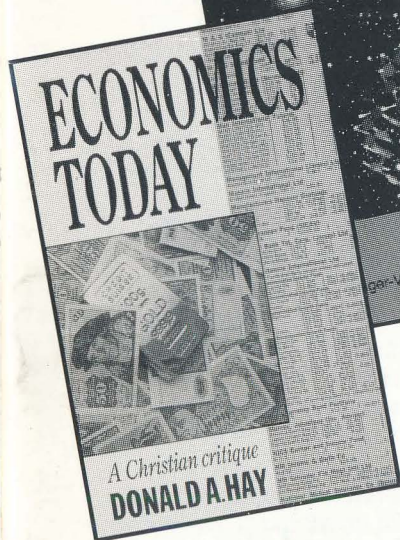
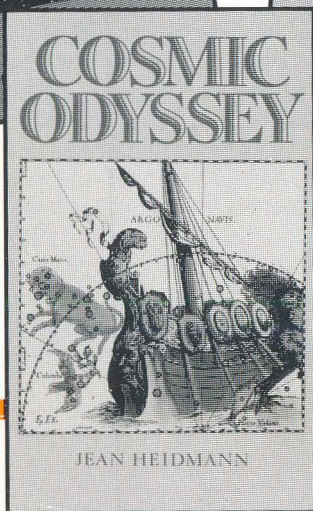
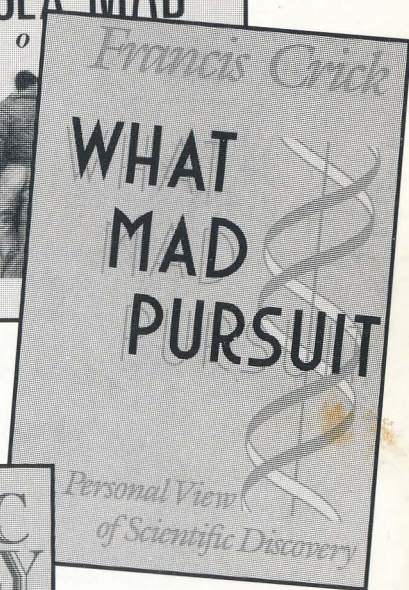
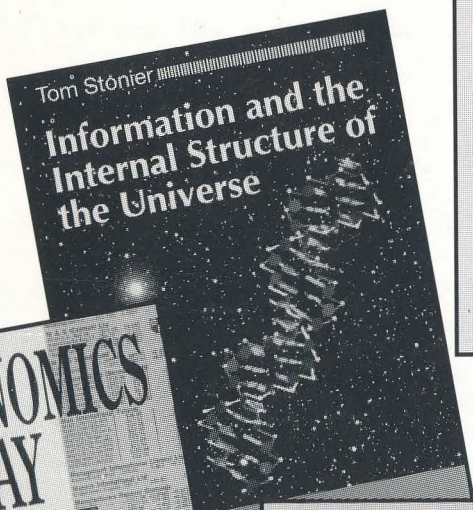
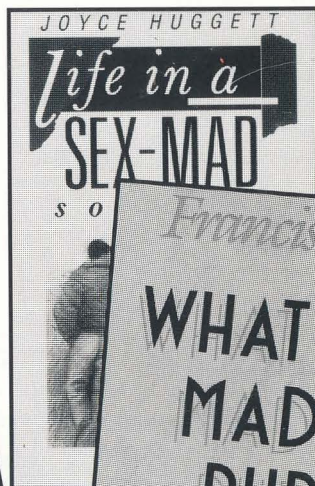


FAITH & THOUGHT

• BULLETIN •



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EDITORIAL

It was the intention to include in this issue the address given at the 1991 Annual General Meeting by Dr. E. C. Lucas (*Bulletin* No. 10., October 1991, p.3). However, after consultation with Dr. Lucas, it has been agreed that the substance of his talk on that occasion is largely contained in two articles contributed to *Science and Christian Belief* and printed in the April 1992 issue of that journal, which many members of the Victoria Institute receive. (Volume 4, Number 1, April 1992).

In view of the current discussion on the attempts by scientists to arrive at a 'theory of everything', the article by John Barrow seemed of interest, and is reproduced here. Discussion about theories of evolution seems to be constantly waged, and readers may find John Collyer's article thought-provoking. As the author states, he is very ready to supply more information upon request. The Editor repeats once more that comments by readers are always welcome—perhaps these articles will stimulate some responses.

It was never the intention of the Victoria Institute to limit discussion to matters of 'hard' science, and earlier volumes of the journal show how wide has been the remit over the years. Articles on a variety of topics would be considered, bearing in mind the title—*Faith and Thought Bulletin*.

MAKING MACHINES OF GODS

Scientists are much like other folk. Yet, in modern folklore they have come to be seen as the gatekeepers of truth: holders of the touchstone against which all other systems of knowledge and belief must be tested and tried. Those found wanting are dispatched to the vacuum of meaninglessness. Most other disciplines have adapted to survive by adopting at least a veneer of scientific paraphernalia so as to appear respectable.

But the most striking contrast to the belief system of science is that of 'religion' in its many traditional forms. Once it held the same authority that science commands today. Yet even today it has important things to say about many of the subjects within the dominion of scientific investigation. As a result there exists a steady trickle of books and articles about a perceived tension between science and religion.

A volume of essays by the physicist Sir Nevill Mott is a recent example. Most such writings are quasi-apologetic, aiming to show that the two systems of thought are not mutually exclusive, perhaps citing the historical examples of Christian scientists or the larger role played by monotheistic religious beliefs in creating the metaphysical foundations of modern science. Whereas a century ago they would have been matched in number by voices opposing any theistic view of the world, these have grown strangely silent: not, one suspects, because they have admitted defeat but because the gradual secularisation of modern thought has made the religious alternative appear an insignificant threat to those who strongly oppose it.

The interaction between scientific and religious beliefs about the world is a deeply complex one, involving a weighing of many historical and psychological factors. There are many contrasts between the approaches to the world that these belief systems offer but if one were to be forced to pick only one then the issue of doubt versus certainty is the most interesting and provocative.

Scientists are trained doubters and scepticism has been enshrined within some philosophies of science which emphasise the experimental testing of hypotheses and the ephemerality of scientific paradigms. Some, like Popper, wish to accept as meaningful only those claims which are open to falsification. The pros and cons of such a rigidly human-centred criterion of meaning have been debated fairly thoroughly by scientists and philosophers of all persuasions. An awkward dilemma is the fact that there exist highly respectable 'scientific' theories, like 'atomism'—the view that matter is composed of a hierarchy of sub-structures culminating in some basic building

blocks that we tend to call elementary particles—which have an ambiguous pedigree.

This view of the nature of matter has been tested in certain ways by a multitude of experiments and is taught in all the universities of the world. But its origins are totally unscientific. It arose in ancient Greek thought as an entirely metaphysical or religious idea for which there was not a shred of empirical evidence; indeed, it would be thousands of years before the means would even exist to search for such evidence. Thus ancient atomism would have failed any contemporary criterion for scientific validity, yet it contained a kernel of deep truth about the world.

Let us return to the question of doubt or certainty. Whereas scientists do well to be sceptical, 'believers' of any religious persuasion maintain a core of beliefs which they regard as unfalsifiable or transcending falsification. In effect they must hold that there exists a realm of 'absolute truth' which humans may enter through a very strait gate. The means of access involve elements which are not amenable to complete rationalisation.

For the beginning student of science this sounds a lame and fantastic claim. But it is instructive to compare it with the claims that many notable scientists (for example, and most recently, Roger Penrose in *The Emperor's New Mind*) make concerning the relation of mathematics to the world. In order to reconcile the extraordinary fact that mathematics works as a description of the physical world they pursue a Platonic view that mathematicians do not merely invent mathematics to suit their own purposes: they discover it.

This requires them to maintain that there exists another world of mathematical entities or ideas and the mathematical nature of reality is a manifestation of the blueprints of absolute truth that reside there. It also requires them to suppose that there exists some strange means by which we are able to interact with this other world of mathematical ideas so that our minds become aware of them.

Writing in defence of such a mystical view, Penrose suggests that 'consciousness represents some kind of contact with the timeless Platonic world of mathematical concepts. Proper communication between mathematicians can take place only when each individually makes this contact.'

A surprisingly large number of mathematical scientists subscribe to the Platonic view that the world *is* mathematical in this sense. But few scientists even recognise 'pi in the sky' mathematical Platonism as a religious view. Indeed, less seriously one could go further out of deference to the perennially popular 'Undecidability Theorem' of Gödel to claim that if a religion is defined to be a system that contains

unprovable statements then not only is mathematics a religion but it is the only religion able to prove itself to be one.

There have been times when religion and science were closely allied and there have been times when they appear to have been in open conflict. The contrast between doubt and certainty sheds some light upon this history and also upon the current resurgence of common interests at the interface between theology and fundamental science.

The cogs of the Newtonian worldview which meshed 300 years ago provided onlookers with a picture of the world as a vast mechanism following God-given 'laws that never shall be broken. For their guidance hath He made'. Whereas earlier attempts to create a natural theology by gleaning evidence for the worldly activities of a benign Creator had focused upon particular fortuitous outworkings of Nature, like the human eye or the tailor-made animal habitat, the Newtonian apologists pointed to the existence of the invariant laws themselves as the evidence for an omnipotent Lawgiver behind the scenes.

We must appreciate, however, that this scientific picture of the world was not treated like any modern one. It was not doubted in any way. Newton was regarded as having discovered the way that the Almighty had constructed the world. 'Nature and Nature's laws lay hid in night: God said, "Let Newton be" and all was light'. Hence the close study of, and sympathy with, such scientific pictures of the world did not entice the adherent to adopt a sceptical point of view which might then have dangerous consequences elsewhere. Scepticism was engendered by metaphysics not by physics.

One of the reasons that the Newtonian picture of the world was taken to represent absolute truth was because it was founded upon the ancient principle of geometry. Newton's *Principia* is a *tour de force* of the power of Euclidean geometry. In and before Newton's time, and for more than a century and a half afterwards, theologians were able to point to the existence of Euclid's geometrical theory as a true description of the world—the human discovery of a little piece of ultimate truth. Its existence enabled one to refute any sceptical claim that ultimate truths like those sought by religious believers were beyond human ken.

In the 19th century this changed in a dramatic way. A number of Continental mathematicians discovered that there exist other logically consistent non-Euclidean geometries which arise if the famous 'Fifth' parallel postulate of Euclid is not assumed. This gave rise to geometries for curved rather than flat surfaces. Triangulation was a well-defined operation on these surfaces but gave rise to 'triangles' whose interior angles did not sum to one 180 degrees.

All this sounds rather mundane unless one is a geometer, but the wider consequences for religious and philosophical thought were dramatic. Something of a crisis arose which traditionalists responded to by seeking reasons why the old geometry of Euclid merited a special status. These efforts succeeded only in identifying a distinction without a difference. Worse still, Einstein would eventually replace Newton's rectilinear world of inflexible space and immutable time by one which revealed real space and time to follow the curvilinear paths of the non-Euclidean geometries. Faced with an infinite sea of logically valid alternatives, no longer could one point to Euclidean geometry as a unique part of the ultimate truth about reality. Its status was downgraded to that of but one amongst many possible geometries, some of which were now seen as man-made systems.

Many sceptics and iconoclastic thinkers seized upon these discoveries to challenge the assumption of absolute truth in a host of different areas of human thought and practice. No longer did they 'hold these truths to be self-evident' whether they concerned the rights of Man or right-angled triangles. Whereas once the assumption that there existed 'best' systems of ethics and government had seemed a reasonable one to entertain by analogy with the status of Euclidean geometry, now the relative status of such notions was an obvious parallel to the new position of Euclidean geometry.

Strikingly, the term 'non-Euclideanism' came to signify any relativist challenge to a doctrine of God-given truth across the entire spectrum of human activity. Articles appeared promulgating 'non-Euclidean economics' and 'non-Euclidean systems of government'. Later, the discovery of new logics would carry this trend further to undermine the assumption that classical logic was an absolute truth. Finally, Tarski would go on to banish any well-defined notion of absolute truth from the game of logic, whatever its rules.

All this relativism in science and mathematics arrived at a time when the impact of Darwin's assault on another citadel of absolutism was still being absorbed. Natural selection revealed that our physical attributes, like those of the other less cerebral members of the living world, owed their nature to a gradual process of change rather than a once and for all design plan. These events led to an awkward separation of religion and science which was easy to portray as a state of outright warfare. The events of this cold war are often told, retold and reinterpreted and so can easily assume a misleading stature when viewed from afar by the casual observer of the interaction between science and religion.

Subsequently we find a curious long-term trend in the relationship between the theological emphasis upon certainty and that scientific

habit of provisionalism that we now find enshrined in semi-popular philosophies of science like that of Kuhn with its never-ending cycle of revolution and revision. Where the discoveries of non-Euclidean geometries and new logics had placed emphasis upon the unexceptional nature of the truths that man had fished intuitively from the great ocean of possibilities, the new discoveries of 20th-century physics took a new turn.

Quantum theory introduced the notion of an absolute limit to our understanding of the world and hence opened up a new front for the religious scientist to probe. The God-of-the-gaps might be resurrected under the cloak of quantum uncertainty. Such an apologetic persists in some quarters even today and has become allied to a search for inevitable gaps in human accounts of the physical world occasioned by the possibility of chaotic behaviour. In our inability to determine the future states of chaotic systems, some apologists find room for the controlling influence of a God-of-the-gaps. Yet clearly this indeterminism is not intrinsic. It is merely our inability to determine in practice unless we look down at the quantum level whereupon we recover no new source of randomness at all—merely old-fashioned intrinsic quantum uncertainty.

Recent theological interest in the development of fundamental physics in its quest to uncover a 'Theory of Everything' is understandable. Many of the questions that the two subjects consider—the creation of the universe, the nature of time, the end of the universe—are identical. But most interesting is the way in which this quest once again offers the seductive possibility of absolute truth to those who had become accustomed to mathematical 'models' which provide only the latest human edition of the truth. In recent years the success of certain types of physical theory founded upon mathematical symmetry and the requirement of self-consistency has been unexpectedly successful in narrowing down the possible theories which could simultaneously describe all the forces of Nature as different manifestations of a single unified force.

Some optimists talk of the work of fundamental physics being complete if only one of these theories should prove acceptable and then be confirmed by experiment. Many particle physicists regard such theories not simply as models or approximations to reality but as exact descriptions of a reality that is for some unknown reason intrinsically and Platonically mathematical at its deepest level. For the theologian something akin to absolute truth re-emerges to replace the lost exemplars of classical logic and Euclidean geometry.

And indeed we see that if the pious hope of the scientists for a single all-embracing theory of the laws of Nature is successful then it

will have turned fundamental science into an unfalsifiable collection of statements about the world founded upon a faith in the primacy of symmetry and mathematics

The author is professor of astronomy at the University of Sussex. His latest book Theories of Everything: the quest for ultimate explanation has just been published by Oxford UP.

Can Scientists Believe?: Some examples of the attitude of scientists to religion, *ed Sir Nevill Mott, is published by James and James.*

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SCIENTISTS EVALUATE THE MANY THEORIES OF EVOLUTION

It is commonly thought that everybody who is anybody in science believes in the theory of evolution. This is far from the truth. A brief look at what scientists are saying about the subject is enough to explode that idea. For example:

'These are confusing times for those who take an interest in Darwinism. Observers are still faced with a bewildering variety of scientific opinions, some Darwinian, some more or less Darwinian and some quite unDarwinian in character.' This was written in a review of a book entitled "What Darwin Began", intended to guide readers "through the evolution jungle" (*New Scientist*, 12 Sept., 1985, p. 59).

The theory has never been short of critics. Much of the severest criticism has come from evolutionists. For, unlike the popular concept of the theory, there is not just one agreed scientific theory of evolution, but there are many conflicting ones. This writer has a list of over 50 conflicting theories of evolution. It is interesting to note that as each new theory is offered, its author takes great pains to point out the errors in previous theories. The more new theories are put forward, the easier it becomes to fault the previous ones!

EARLY CRITICS

This situation began early with Darwin pointing out the errors in the work of St. George Mivart, 'The Genesis of Species'. He also slammed

the earlier theory of Lamarck that acquired characteristics could be inherited. In turn, Mivart poured scorn on Darwin's 'puerile hypothesis'.

In Darwin's 'Origin of Species,' he devoted a whole chapter to the difficulties that he could see might be raised against his theory. If you can bring yourself to read the work, you will find it full of over 800 speculations. Quite unscientific in fact! Countless times he uses such phrases as 'we suppose,' 'if we may assume,' 'perhaps' and 'it may have been'. These are not the words of scientifically established fact. Darwin even admitted that 'when we descend to details, we cannot prove that one species has changed'. Then he wrote, 'If it could be demonstrated that any complex organ existed which could not possibly have been formed by numerous successive slight modifications, my theory would absolutely break down' (p. 189).

SCIENTISTS OPPOSED DARWIN

When the 'Origin of Species' was first published, Darwin was very disappointed to find that it was being criticised as a mass of speculation. It was pointed out that it was not substantiated by the evidence he offered. His scientific critics claimed that he had deserted the path of inductive science to indulge himself in a wild hypothesis, outside the realm of science. Most of his contemporaries in the scientific world held the view that a theory must be proved before it could be regarded as acceptable scientific knowledge.

The noted astronomer, Sir J. F. W. Herschel, called the theory of Natural Selection, put forward by Darwin, as 'a law of higgeldy-piggeldy', thus expressing his contempt for a theory that relied on a whole series of haphazard accidents for its progress. It was pointed out then, and many times since, that the concept of natural selection, or 'survival of the fittest', as it came to be known later, was an empty tautology, because in the survival of the fittest, it is obviously the fittest who survive.

'DARWIN IS DEAD'

The two evolutionists, J. B. S. Haldane and Julian Huxley, announced in 1932 that 'Darwin is Dead', referring to the theory rather than the man. They proceeded to offer their alternative theory based on their newly acquired knowledge of genetics. Yet, their theory was to be revised a few years later in their book 'Evolution, the Modern Synthesis'. Following this, a flood of new theories poured forth at the rate of about one a year. Each new idea began by pointing out the fallacies of the previous theories.

Thus far, the theories had relied on the idea of many small changes over a vast period of time to account for the progress of evolution. In 1940, Richard Goldschmidt proposed his 'Epigenetic Evolution' whereby he proposed that evolution had taken place in a series of great strides forward, such as a dinosaur's egg hatching out into a primitive bird or an ape giving birth to a protohuman. This theory came to be known as the 'Hopeful Monster' theory, and many poured scorn on such an unscientific idea.

UNSCIENTIFIC 'SCIENCE'

Just how unscientific speculators can get was illustrated by the amazing statement of C. Ponnamperna in 'Chemical Studies in the Origin of Life' (*Space Life Science* I, 1968, p. 64) where he wrote, 'Spontaneous generation of a living organism is impossible, yet here we are, as a result. I believe, of spontaneous generation'. If he could conceive of this miracle, why could he not go a step further to accept the miracle of creation?

The 'Scientific American' for July, 1985, p. 54, in an article headed 'The Evolution of Darwinism', reviewed the 'modern synthesis' of W. B. Provine, and commented: 'The new molecular biology, by showing the evolution process at the level of DNA is far more complex than had been thought, and casts doubts on some old certainties'. In similar strain, the next month, the American evolutionist, Niles Eldredge wrote: 'The alert reader of science magazines can hardly fail to be aware of a wide spread lay rumour of something rotten in the state of Darwinism' (*Nature*, 22 Aug. 1985, p. 683). However, this preamble was to prepare the reader for the introduction of a new theory 'Punctuated Equilibrium', which turned out to be a revised form of the 'Hopeful Monster' theory. It sponsors sought to overcome the problem of the 'missing links' in the fossil record, by offering the theory of great jumps from one species to another. Darwin had foreseen this idea and rejected it as being contrary to nature in the phrase 'Natura non saltum' (Nature does not make jumps).

THE SHIFTING THEORY

Only a year later, the same Niles Eldredge wrote in the *New Scientist* (5 June, 1986, p. 54) that he was looking for 'an evolution theory more in tune with life's actual history on earth'. It would seem that his own theory of a year before had not convinced its author. Then when his associate, Stephen J. Gould, proposed his 'Evolutionary Dynamism' soon afterwards, Eldredge was scathingly critical.

The historical fact that the theory is still being corrected, adjusted and revised by a succession of new versions, most of which begin by pointing out the shortcomings of previous theories, indicated that its proponents are far from sure of the theory. For example, the strongly pro-evolutionary magazine 'Nature' featured an article headed 'The developing theories of evolution' which stated that the theory of 'Darwinism is inadequate as an explanation of long-term evolution' (2 Nov., 1984, p. 386). The same magazine said that "The outstanding question about evolution today remains the same as it did in Darwin's day—given descent from a common ancestor, how did the extraordinary diversity of life come about?" (20 July, 1988, p. 206). In the book 'Implications of Evolution' by G. Kerkuk, he asks the question, 'What conclusions then can one come to concerning the validity of various implications of the theory of evolution? If we go back to our initial assumptions, it will be seen that the evidence is still lacking for most of them'.

A THEORY IN CRISIS

The Australian molecular biologist, Dr. Michael Denton, wrote 'Evolution a theory in crisis' (Barnet, London, 1985) and said, 'The Darwinian theory of evolution is no more nor less than the great cosmogenic myth of the twentieth century'. Nevertheless he remains an evolutionist and that statement was but a prelude to his own pet theory. The Swedish professor of Zoo physiology at Umea University, Soren Lovtrup, has written, 'Darwinism—the refutation of a myth' (Croom Helm, 1989, p. 352) in which he said: 'The Darwinian theory of natural selection, whether or not coupled with Mendelism, is false . . . Hence to all intents and purposes, the theory has been falsified, so why has it not been abandoned? I think that the answer to this question is that current evolutionists follow Darwin's example, and refuse to accept falsifying evidence'.

STRONG CRITICAL WORDS

In the 'Great Evolution Mystery' (1983), G. Taylor wrote: 'The theory of evolution by natural selection seems either inadequate, implausible or definitely wrong' (p. 137). These are strong words from a writer who is an evolutionist. But he was not alone, for in 'The Evolution of Living Organisms' another evolutionist writer, P. P. Grasse (p. 202) wrote: 'The explanatory doctrines of biological evolution do not stand up to an objective in-depth criticism. They prove to be either in

conflict with reality, or else incapable of solving the major problem involved'.

After explaining at length how all previous theories of evolution could not work, Richard Dawkins wrote the 'Selfish Gene'. He admitted that 'superficially the obvious alternative to chance is an intelligent creator', but instead he opted for 'an intelligent gene'. However, he had second thoughts later, even exposed some of his own errors and wrote yet another edition of his selfish gene. He remains an evolutionist, in spite of clearly seeing the errors of the theories of others, and of his own idea.

At the Darwin lecture to the British Association (Sept. 1980) by Dr. John Durant (University College, Swansea) he said: 'Darwin's evolutionary explanation of the origin of man has been transformed into a modern myth, to the detriment of science and social progress' (*New Scientist*, 11 Sept. 1980, p. 765). It is interesting to note that the doctor perceived the relationship between the theory and its effect on the attitudes of man to man.

THE BIOLOGISTS' VIEW

A letter from 22 working biologists at the British Museum of Natural History was published in 'Nature' (12 Mar. 1981, p. 82) stating that 'we have no absolute proof of the theory of evolution . . . and the theory of evolution would be abandoned tomorrow if a better theory appeared'. The editorial of the same date (p. 78) asked the question, 'How true is the theory of evolution? Is Darwin's theory of evolution a fact, a pack of lies, or something in between?' Then it was admitted that 'large sections of the general public are sceptical of Darwinism', and 'Darwinism may ultimately be falsified'. Coming from the editor of a magazine that was founded to promote evolution, these comments are surely significant.

The 'Encyclopedia of Human Evolution' was reviewed in 'Nature' (13 Oct. 1988, p. 598) when the reviewer said: 'It may be argued that it is inappropriate to give an encyclopedic authority to what might be nothing more than a passing fashion.'

The fact that the theory has not been scientifically established, in spite of over a century of intense scientific investigation, and is still being corrected, adjusted and revised in a succession of new versions offered by scientists who have not been convinced by the earlier forms of the theory, should be ample evidence that it cannot yet be claimed to be true science. The evolutionists' own evaluation of the theory of evolution shows it to be an uncertain supposition. That evolution has taken place somewhere, somehow and somewhen is a

faith in the unknown that is the result of the firm rejection of the evidence for divine creation in an endeavour to deny the existence of Almighty God and the authority of His Word. 'The fool hath said in his heart, there is no God' (Psa. 14:1).

Further copies of this and a list of 50 theories, are available free, for stamped addressed envelope (or for overseas, an International Postal Coupon) from—John V. Collyer, 35 Westward Ho, GRIMSBY, DN34 5AF, UK.

VICTORIA INSTITUTE ESSAY COMPETITION 1992

The Institute regularly awards a prize of £150 for an essay on a topic consonant with the aims of the benefactor concerned. For 1992, the originator of the Prize Fund was Langhorne Orchard, and the following are the alternative proposals for the essay:—

1. Does genetic engineering pose an ethical problem for the Christian?

or

2. How does the intellectual climate of the day affect the Christian's understanding of ethics?

The essay, on either of these topics, should not exceed 7000 words, excluding documentation, and should be addressed to the Honorary Secretary at the Institute's office (below) not later than September 30th, 1992.

The essay should be type-written, with double spacing and 2cm margins, and undersigned with a motto only. It should be accompanied by a sealed envelope with the motto outside and the author's name within. Each essay should be accompanied by a brief synopsis of 200 words, setting out which parts of the essay are claimed to be original.

The Council of the Victoria Institute will own the copyright of the essay, though will normally permit the author to embody it in a more comprehensive work later. The name of the successful candidate will be announced as soon as possible after a decision has been reached. In all cases the decision of the Council is final, and it reserves the right to withhold the prize if no entry is deemed worthy.

Candidates are assumed to have assented to these rules when an essay is submitted. The Council office is: 41 Marne Avenue, Welling, Kent, DA16 2EY.

BOOK REVIEWS

Norman M. Ford *When Did I Begin?* Cambridge University Press, 1988, xviii + 212p., hardback, £19.50

The clue to the way this question is answered lies in the subtitle, 'Conception of the human individual in history, philosophy and science'. Dr. Ford is a Salesian priest and moral philosopher and concludes with the answer that we did not begin before definitive individuation, which occurs with the appearance of the primitive streak at 14 days after fertilization. The book argues against placing the time of ensoulment before or after that time.

The forward is written by Baroness Mary Warnock, who chaired the U.K. Committee of Inquiry into Human Fertilization and Embryology. While that Inquiry examined the question of when human life became morally and legally important, they did not attempt to answer the question 'When did I Begin?', which really should be the fundamental question before considering how to treat the human embryo.

The book is written with a philosophical approach, including much current scientific knowledge of embryonic development which is crucial to the question. Many Christians have stopped considering the weight of scientific data beyond the moment of fertilization, however the formation of a new genotype after the sperm and egg fuse, is not the only major step in embryonic development, and is not necessarily synonymous with our beginning. The references and notes are quite adequate, and there is a reasonable glossary which will be needed. We could hope that it might become available in a cheaper paperback edition, as it is an important book at a time when society is deciding the laws dealing with human embryos.

After an introduction to recent considerations of this question and the problems of language, Ford turns to the historical influence of Aristotle on our ideas of human reproduction. This is a useful historical introduction from the thinking of Aquinas and the relevance of scripture to the current Vatican position. Then the criteria for being a human individual is examined, which he equates with the idea of an ontological individual. The being must start to behave like an individual before individual personal development can occur.

After laying this foundation, the second half of the book is divided into another three chapters, considering the scientific and philosophical evidence, and the various arguments put forward for the beginning of a human individual at three stages, fertilisation, implantation and after implantation. There are several problems with

placing the beginning of the individual at fertilisation, including the difference between genetic and ontological individuality, identical twinning occurs between 7–10 days later, the 70% natural embryo wastage before implantation is complete (14 days), the totipotency of early embryonic cells, the lack of unity of the cells in the early embryo, the possibility of chimeras (individuals from multiple embryonic cells) being formed, and recombination (two embryos combine to form one), and parthenogenesis where the embryo is not the result of a fertilized egg with the new genotype, the possibility of a cancerous tumour being the outcome of embryonic development. There are important philosophical problems with ensoulment occurring before an individual exists.

Implantation is the next major stage (7–14 days), and it has some significance for the stability that is occurring. More significant is the formation of the primitive streak at 14 days which makes a beginning of the clump of cells becoming an individual coordinated embryo. By 3 weeks the process called gastrulation is completed where the embryo has formed the three basic types of tissue and the membranes around the embryo are well underway. Ford concludes that the time of individualization is 14 days, the time from which we began. There is some logic in saying that a 'human individual could scarcely exist before a definitive human body is formed', fertilization is to be considered as the beginning of the development into a human individual.

Some Christians believe that God preordains all fertilizations and they see fertilization to be the start of a person which is considered to come about as the direct result of God's will. However, this view, which is the common objection to manipulating human embryos, can apply to any particular stage of embryonic development as it applies to ensoulment. It is a separate question to that considered in this book. It is the deeper theological issue of God's providence versus free will. To believe that every action is the direct result of God's will is only one possible interpretation of God's sovereignty. Some knowledge concerning human development that is accessible in this book might help to change this attitude. This issue is important in consideration of birth control, embryo arrest, abortion and embryo research.

There are still questions regarding the time of ensoulment, such as the idea of brain life, when the brain begins to function, as a criteria of personhood. This book is written in a style open to philosophers, scientists and laypeople of most religions. Whatever our interpretation of life's beginnings, the arguments discussed and the scientific descriptions provided are useful. It is an important book in the

development of Christian thinking on the subject also, being basic reading for anyone interested in this or related questions. Even if the human individual does not begin until after 14 days, it does not mean that we can treat eggs, sperm and embryos in any way, or use them for experimentation. That is a separate question, but one that is dependent on the answer to when did we begin.

DARRYL MACER

John Wilkinson *Christian Ethics in Health Care* Edinburgh. The Handsel Press, 1988, xi + 510 pp., hardback, £27.50

This book claims to be the most comprehensive book available on the subject of Christian ethics in health care, and is subtitled 'A source book for Christian doctors, nurses and other health care professionals'. It certainly covers a wide range of topics and could serve as a reference book on Christian ethics for health workers, at least being a place to begin to examine the ethical issues in medicine. Dr. Wilkinson studied medicine and theology, and has been a practising physician.

At first inspection there seems to be a reasonable number of references, however these could certainly have been helped by a greater proportion of more recent books on approaches to Christian ethics, and medical dilemmas. The brief reading list at the back of the book provides a few more recent books. The reference list could have been more comprehensive and modern for what is a 'Source book'. There are three indexes, according to subjects, names and scripture references.

The book is divided into three parts, Christian Ethics in Outline (pp. 3-92), Health Care Ethics in History (pp. 93-162), and Christian Ethics in Health Care (pp. 163-486). After defining ethics, he says that Christian ethics is inseparable from theology. The sources of Christian ethics are natural morality, Biblical ethics, experience, philosophical ethics and ethical situations. The main ideas are discussed adequately for the purpose of the book, which is not to address the deeper discussion of ethical theory, but to arrive at some ethical principles to be applied. The presuppositions of Christian ethics are examined by looking at the aspects of man as created, fallen, redeemed and perfected; then the motives for Christian ethical conduct; then the characteristics of Christian ethics are described as relational, absolute, comprehensive and redemptive.

There is an historical discussion of health care, which is a good introduction to the subject, in the space given. The profession is described which is certainly a key feature of medicine, and the various codes of ethics that have been used at different times and in different cultures. Prior to examining individual issues, a Christian approach is outlined, as an 'Ethical Questionnaire', which is summarized in a page. Perhaps more discussion should have been centred around this summary of ethical principles since this should be at the core of how health care workers can approach ethical dilemmas. It consists of asking many questions in three categories: What guidance do our sources provide (the five sources above plus the Holy Spirit and prayer, or conscience for the sake of a better word); is one particular solution suggested; and what is the underlying motive? At the end of the book there are some questions for discussion, which may be useful for Christian medical groups to think about.

The rest of the book addresses specific issues, the topics covered include contraception, infertility treatments, abortion, life-sustaining technology, death, organ transplantation, euthanasia, human experimentation, resource allocation, health care relationships, informed consent, confidentiality and AIDS. The major issues that are not covered are genetic screening and selective abortion, and genetic technologies, so that this source book is not complete, though no book really can be. The various arguments concerning each subject are voiced, which is obviously important as we often find people use versions of several basic arguments to support their views on a subject. It is good to know the strengths and weaknesses of each. There are short summaries of orthodox Christian views of underlying ideas such as sex, marriage, and fertility. The historical introductions, legal guidelines and scientific summaries of available methods used in medicine make the book useful to the layreader who wishes to know more of these medical problems. The writing style is accessible to anyone interested in these topics.

No dramatically new ethical approach is outlined in this book, and it will not shake the foundations of ethical theory, but certainly if we allowed the principles outlined it would make medicine more ethical. The way in which it discusses the various viewpoints on issues, including the various Christian positions is useful. As it is one of the most comprehensive source books available it would be a useful addition for practitioners of health care and interested layreaders, especially at a time when these issues are involving the public more than they did in the past.

Stanley L. Jaki *The Physicist as Artist: The Landscapes of Pierre Duhem* Scottish Academic Press, Edinburgh, 1988, 188pp., £25

The major part of this book is, of course, taken up with illustrations of the artist's work, 150 out of 190 pages. Most of the pictures are in black and white, but there are 8 colour plates. The range of Duhem's is wide indeed, from satirical cartoons, through water-colours to oils. The majority of the paintings are of landscapes, but there are many portraits also. Duhem was a man of deep, catholic faith, with a compassion for the poor and needy. He had his own share of suffering, especially at the hands of the scientific establishment. Such is often the lot of the innovator, and Duhem's 'chemical potential', so accepted now, led to his banishment to the provincial universities. The last years of his life were devoted to writing a history of science, still in proof at the time of his early death at 55.

Stanley Jaki provides a fascinating insight into the life of Pierre Duhem, one suspects a favourite subject of his. Many facts may not be well-known to those who know only Duhem's scientific achievements. It is rare to find a person who combines science and art in one personality, but Duhem was such a person. His works of art deserve to be better known, and Jaki is to be congratulated for carrying out this task, and the Scottish Academic Press for producing such a beautiful volume. The book is dedicated to Marie Madeleine Gallet, chief support to the ageing Helene Duhem, Pierre Duhem's only child. One awaits the promised book by Jaki on the life of Helene Duhem.

A. B. ROBINS

Hans Kung *Global Responsibility (In Search of a New World Ethic)* S.C.M. Press, London, 1991, 158pp., £12.95

This book expresses the fruition of a longer period of reflection on several issues, which have been the subject of several books by Hans Kung. A prominent issue among them has been the relationship between world religions, with particular reference to the place of the Christian Church among them. This relationship has its pragmatic out-working in this book in a call for a wide spread acceptable criteria or norms, to provide a base for peace and social justice. It is claimed that a world ethic is possible when the world religions have learned through dialogue to formulate agreed ethical norms, whilst at the

same time believers are firmly committed to their own religious tradition.

The book is divided into three parts, each of which is clearly discussed in stages. Firstly, Kung claims that there is no survival without a world ethic. In support of this claim, he provides material from political and economic changes, which demonstrate a change of values in the modern world. This includes the role of ethics in regard to planetary responsibility, in which debate religion should play a significant moral part, with specific Christian requirements.

Secondly, to secure world peace, it is necessary to find a path to religious peace, since the pursuit of ultimate goals, e.g. truth, has in fact resulted in wars. Hope is provided where there is a quest for ecumenical criteria, based on universal human values, which have a religious foundation. Dialogue in the religious search for peace needs to emphasize the virtues of 'steadfastness' (not a very happy term!) and 'constancy', noting that to hold a clear position does not preclude dialogue. Commitment to a particular religious tradition is important.

Thirdly, it is argued that such religious dialogue to pave the way to religious peace requires research into basics and a re-think in our approach to history, which has often distorted our viewpoints.

To this end the great currents of religious systems, namely the prophetic, mystical and wisdom, may be explored to discover an ecumenical horizon. Inter-religious dialogue however must not be a self-contained discussion but provide a wider platform to embrace many other groups in society, such as politicians, business, finance, scientists and the every-day dialogue of individuals.

This book is concerned with issues of grave public moment, written in clear non-technical language. It provides a valuable contribution to the debate on the moral criteria in wide sectors of public life. It is fine translation by John Bowden, although some infelicities of expression might be improved (e.g. such terms as 'Incapacitation', 'bi-polar', 'Iran-Gate'; 'leverage buyouts' and 'me-ism'). The argument throughout highlights the importance of religious belief and its moral implications if there is to be found a common basis for justice and world peace.

JOHN H. CHAMBERLAYNE

William A. Charland Jr. *The Heart of the Global Village: Technology and the new millenium* SCM Press, London, 1990, 122pp., paperback

The thesis of this unusual little book is relatively straightforward. We

are entering the final decade of the millenium. It will be a period of radical changes; fresh possibilities abound and serious challenges confront us. During the countdown to 2000 A.D. we must learn to discern and test the spirits of the age.

So far so good. However, Charland approaches his thesis in an entirely unexpected fashion. Contrary to what you might expect from the title this is no critical analysis of our technocentric culture. Instead the author attempts to explore these issues through the medium of his own spiritual pilgrimage. Much of the material has evolved from articles written for a variety of magazines and newspapers during a long sabbatical. Thus the book has a highly personal quality. Indeed, from time to time, Charland describes it as a journal: 'a journal of my search to understand a changing world, and redefine my own place in it'.

Charland attempts to chart a spiritual pilgrimage in the context of travels which take him from Denver, Colorado to Canada, Kenya, Great Britain and back to Colorado. Presumably the incidents and events he describes are meant to be iconic of the spiritual realities he discerns underlying our changing global economy. However, some of his choices are so idiosyncratic as to be quite opaque to most readers. For example the chapter on the demise of Canadian (as distinct from American) Football left me bewildered. Surely he could have found a more intelligible example of the difficulty of maintaining local cultures and traditions in the face of the homogenizing effect the international media industry.

The choice of genre might have been justified if it had enabled Charland to discern more clearly the spirits of the age. However the spirits and forces he describes have all been well documented elsewhere. He discerns three major forces shaping our culture: advanced technology (particularly information technology) bringing in its wake a new kind of free enterprise (the grassroots entrepreneurs), unemployment, and an ever-accelerating pace of life; resource constraints; and, instant communications resulting in a homogenization of markets and cultures.

Charland's pilgrimage is reflected in an apparent shift in attitude towards the spirit of free enterprise. The opening pages suggest a celebration of free enterprise. However, by the end it is clear that Charland has deep misgivings about this particular spirit.

What has Charland's pursuit of the spirits of the age taught him? He suggests that the symptoms he has described point to the death throes of the Protestant work ethic (which he wrongly attributes to Calvin). But he also discerns signs of hope. In the wings waiting to replace the dying ethic he sees a new ethic of personal involvement

in which relationships take priority. Allied to this he sees a holistic world-view, an interest in alternate states of consciousness, and a move from high technology to appropriate technology.

I am forced to the conclusion that Charland's pilgrimage was more sentimental than spiritual. The cover notes suggest that we live in 'a time for deep vision'. This is not the book to provide that vision.

LAWRENCE H. OSBORN

Roger Forster and Paul Marston *Reason and Faith* Monarch, 1989, 480pp., paperback, £8.95

The subtitle of this voluminous book is 'Do modern science and Christian faith really conflict?', which is somewhat misleading as 7 out of 16 chapters do not specifically address science/religion issues. Indeed, what is attempted is quite breathtaking with so much ground being covered, ranging from philosophy and meaning to the historical evidence for Jesus on the one hand, and from miracles and science through to God and chance on the other, taking in the nature of man, the problem of suffering and Genesis 1-3 along the way. Herein lies one of the book's greatest weaknesses—the writers try to bite off far more than they can chew. The result is a very uneven book, leaving the reader with feeling of dissatisfaction as on occasions subjects which require greater treatment are handled in a superficial way, with the reader having to make do with short summaries of the authors' own opinions, and a rather patronizing treatment of other people's work with which Forster and Marston disagree.

It is on two counts that one is seriously unhappy with this book.

The first is the way in which ideas of one such as the late Professor Donald McKay are balefully misunderstood and misrepresented. For example, this is how Forster and Marston 'represent' and attack MacKay's position on the question of sin and moral responsibility (referring to his *Brains, Machines and Persons*): "The view that sins are "reduced to the category of mechanical malfunctioning" is (according to Mackay) wrong, because it "disastrously confuses the categories and standpoints of the I-story and the O-story" . . . MacKay, however, is inconsistent for on the same page he states: "Obviously there will be special cases of brain malfunction in which responsibility is diminished or abolished because the normal link between rational decision and action is weakened or overridden". Unfortunately, "brain malfunction" is an O-story concept whilst "rational

decision" is an I-story one, and by MacKay's own rules they cannot be mixed like this. According to MacKay the mind is simply a different dimension or perspective on the same events, described in mechanistic terms—there can be no interaction' (p. 187).

But this is seriously wide of the mark. Is MacKay really mixing categories? This would be the case if MacKay were saying that no relationship exists between the two stories, and nowhere does he ever describe the mind as 'simply a different dimension or perspective on the same events'. There is a duality in MacKay's model—a duality of aspects (not perspectives) and the brain is said to *embody* human personality, and as such, mental activity determines brain activity (see *The Open Mind* p. 71). If the brain is damaged or altered in some way (eg. by electrical stimulation), then the normal functioning of the I-story (with its related talk of responsibility) will obviously result. In such cases it is possible that the principle of logical indeterminacy will not apply for what is predicted of the cognitive agent's future actions would be inevitable for him whether he believed it or not.

The writers state: 'MacKay goes on to argue that it would be as fallacious to reduce sin to a mechanical malfunction as to imagine that a programming fault in computer software must imply mechanical failure. But this analogy is even more confusing for in his system the mind does not use the brain (as software uses a computer), but describes from a different perspective exactly the same thing' (p. 187). Apart from it being a debatable point whether it is correct to speak of software 'using' a computer anyhow, this is to wrest MacKay's analogy out of its proper context. The point MacKay is making is the need to keep our categories distinct and not to reduce one to the other. To think of sin in terms of a *mechanical* malfunction would be analogous (although not identical) to thinking that an error which lies in a computer programme can be located somewhere at the level of the computer's circuitry—one is looking in the wrong direction, using wrong categories—it is a different *kind* of fault. So, though sinful actions (in terms of thought and intentions, issuing in deeds) will have physical correlates at the level of the functioning of the brain (O-story), 'sin' and its associated concepts of 'responsibility' and 'culpability' belong to the 'I-story'. It is people that sin, not brains.

Turning to MacKay's use of the logical indeterminacy argument to provide insight into divine foreknowledge, Forster and Marston state: 'But it does not explain to us why a good God would want to create and sustain a world in which human wills were causally determined to sin'. But this is a strange objection. The reason why neither MacKay nor the Calvinist tradition (which comes in for a few knocks) does not attempt to explain this, is because in these terms it simply isn't an

option. In fact what Forster and Marston have constructed is a man of straw. No suggestion is being made that God '*wanted* to create a world in which human wills are *causally determined* to sin' (p. 187 italics mine), certainly not by MacKay or Calvin. To use the term '*causally*' here so loosely without qualification is unfortunate. Whatever lies behind the mystery of the Fall, one cannot avoid the Scriptural, let alone experiential, evidence that man is constitutionally predisposed towards sin—he is in the words of Luther '*incurvatus in se*'. By all accounts, whether it can be understood or not (and why should we have to have an explanation?), God has seen fit to create a world in which this could happen and sustain a world in which it has happened. In spite of the protestations of the authors, Romans 9:20 can be noneother than the response to the inscrutability of God.

This leads on to the next major concern with the book, its underlying theology which is unabashed Arminianism bordering on semi-Pelagianism. Augustine's views on predestination and original sin are conveniently explained away in terms of his '*Manichaeism*', the writers thus swallowing wholesale the myth originally developed by the German Enlightenment thinker Steinbart in the *Glückseligkeitslehre* (1778). In this regard there is a deficient handling of Romans 5. The writers seem to think that the almost universal recognition that Augustine's translation of v. 12 that 'death passed to all men because *in* him (Adam) all sinned' is incorrect, somehow puts paid to the doctrine of original sin. Quite properly they cite Cranfield in support of refuting Augustine's translation. But although Forster and Marston lump '*Augustine*' (and his doctrine of imputation) and '*Calvanism*' together, so that a rejection of the former implies a rejection of the latter, they fail to recognise that Calvin himself did not adopt Augustine's translation. In his commentary, Calvin argues that we come under God's judgement because we all sin, but we all sin because of our corrupt nature inherited from Adam—a position which in fact is not that far removed from Cranfield's. It would appear that Forster and Marston want to keep the idea that we come under God's judgement because we sin (see as an act of choice) but without the doctrine of original sin.

The appeal to Psalm 51 pointing to original sin (properly understood not as inherited guilt but inherited sinfulness) is considered invalid by the writers on the grounds that it is 'not intended to be taken literally' (p. 245). But the literal or metaphorical nature of the psalm is beside the point, for the theological and existential referent is beyond doubt, namely that man by nature is deformed by sin, a power by which he is held captive.

As if being aware of how perilously close they come to Pelagian-

ism, the authors cover their own tracks with the claim 'We would, of course, assert the biblical doctrine that all men are sinners and need a Saviour' (p. 245)—(the fact that such a thing has to be said at all speaks volumes!). Maybe, but is their view of sin and what it means to be a sinner biblical? The experience in Romans 7 focuses for us the universal experience that man sins because he is a sinner, yet Forster and Marston make the astonishing claim that 'In Romans 7:9 Paul relates how before he felt the authority of the law he was alive, but on recognising it and *committing sin for the first time*, "sin sprang to life and I died"' (italics mine). The writers seem to have think of sin solely in terms of transgression, to the neglect of sin as a power, principle and state as we see it in Romans 5:21, chapters 6 and 7. It is therefore misleading to claim that 'Neither the spreading of the sin nor the parallel spreading of salvation through Jesus is automatic—both involve the choice of individuals' (p. 234). But apart from failing to appreciate the *dissimilarity* Paul makes between Adam and Christ, the writers also fail to make the distinction between sin as a state and sin as disobedience. Confusion is the result.

It is difficult to do justice to a book covering so much, and of course there are sections which are of value. but so disquieting is some of the theology and so disappointing the treatment of weighty matters, this is not a book the reviewer would unreservedly recommend.

MELVIN TINKER

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