

# Faith and Thought

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Great Britain



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## ABOUT THIS JOURNAL

**FAITH AND THOUGHT**, the continuation of the **JOURNAL OF THE TRANSACTIONS OF THE VICTORIA INSTITUTE OR PHILOSOPHICAL SOCIETY OF GREAT BRITAIN**, has been published regularly since the formation of the Society in 1865. The title was changed in 1958 (Vo. 90). **FAITH AND THOUGHT** is now published three times a year, price per issue £3.00 (post free) and is available from the Society's Address, 29 Queen Street, London, EC4R 1BH. Back issues are often available. For details of prices apply to the Secretary.

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### EDITORIAL ADDRESS

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A Journal devoted to the study of the inter-relation of the  
Christian Revelation and modern research

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EDITORIAL

The Annual General Meeting of the Victoria Institute will be held on 16 May, 1981, in the Chemistry Lecture Theatre, Chelsea College, University of London, Manresa Road, Chelsea, London, SW3 to be followed by a Symposium on BIBLICAL ARCHAEOLOGY from 11.00 a.m. to 1.00 p.m. and 2.30 to 5.0 p.m.

Chairman: Terence C. Mitchell, M.A.,  
Deputy Keeper, Department of Western Asiatic  
Antiquities, British Museum.

Speakers: Alan R. Millard, M.A., M.Phil., F.S.A.,  
Rankin Senior Lecturer in Hebrew and Ancient Semitic  
Languages, University of Liverpool.

"Archaeology and Ancient Israel".  
(Illustrated)

John P. Kane, Ph.D., Dip. Ed.,  
Lecturer in Hellenistic Greek,  
University of Manchester.

"New Testament Palestine: Recent Developments in  
Archaeology".

John Ruffle, M.A., F.S.A.,  
Keeper, Gulbenkian Museum of Oriental Art,  
University of Durham.  
"Archaeology does not prove the Bible is true".

Open discussion: "The use and abuse of Biblical Archaeology

*BBC Open University Lectures.* The BBC have drawn our attention to a new OU course "Science and Belief: Darwin to Einstein" to be broadcast on BBC2 (except for the closing Lecture) on the following Saturday mornings at 11.50 a.m.

*Einstein's Belief, May 22 (sic: possibly May 23?); (Lecture 3); The Wave-Particle Paradox, May 30; Scientists Remember Germany, 1918-45, July 4; The Pure Gamete, Aug 1; Skull, Aug 29; The Tennessee Evolution Trial (this to be given on Wed. Sept 9 at 4.30 p.m.).*

*Prof R.J.C. Harris* We are deeply sorry to hear of the death of Professor Harris on 20 Oct. 1980 at the early age of 58. He was a Vice-president of the Victoria Institute and, when he lived nearer London, was active in its affairs. His excellent paper on "The Origin of Life" given on the 14 March 1949 (this JOURNAL 1949, 81, 58-78) is still remembered. At a time of great difficulty in the affairs of the Society, when he was Chairman of the Council, he did much to help us to carry on.

Dr Harris was a leading virologist who for many years worked for the British Empire Cancer Campaign at first at the Chester Beatty Research Institute and, later, at Mill Hill where he was responsible for administering the laboratories financed by the Imperial Cancer Research Fund. In 1971 he was appointed as Director of the Microbiological Research Establishment at Porton, and was responsible for the slow conversion of the establishment from a war to a peace footing - work for which he received praise in the House of Commons by Mr Patrick Jenkin. In 1978 when the microbiological section at Porton was moved to form a new centre for research, Harris was appointed senior advisor on microbiological hazards by the Health and Safety Executive. He was much involved in the formation of the Institute of Biology of which he was at first Treasurer and later, in 1978, the President. We extend our sympathies to Mrs Harris, her son Timothy, and her daughter Susanne, both of whom are now engaged in biological research.

*Personal Note.* As Editor I must apologize once again for the lateness of this issue. After a long and painful illness my dear wife, Ethel Margaret Clark (née Perry) passed away on 1st February 1981.

# News & Views

## WAR

The British Council of Churches has recently been considering the nuclear threat. Dr Kenneth Greet, for the Methodists, deplored the strong sense of resignation among young people in particular who feel that nuclear war is inevitable. Dr Robert Runcie, the Archbishop of Canterbury, referred to the way the horrors of such war are being disguised by the use of euphemistic technical jargon (eg "demographic targetting"). We have no Christian right, he said, to denigrate our enemies instead of loving them and the traditional rules of a just war do not permit of a just nuclear obliteration. The assembly voted unanimously that modern developments create new and grave ethical questions but not even the Archbishop endorsed unilateral disarmament. (*Times* 25 Nov, 1980). The sadness of modern war is well illustrated by the situation in Afghanistan. A captain in the Afghan army fighting the invading Russians said "Some of these young Russian boys do not know why they are there. We captured three recently and they said they had been told they were fighting against Americans. They asked us where the Americans were. We had to kill them of course" (*Times* 17 Nov, 1980).

In a recent poll 48% of those questioned thought that there would be a nuclear war within their life time, while 70% thought that the danger of such a war had increased over the past year (*Times* 22 Sept, 1980). The debate on the BBC programme *Panorama*, (22 Sept.) on whether Britain should abandon nuclear weapons proved exceptionally interesting. The view that in such a war no one could possibly be the winner is widespread and was well represented. But Lord Chalfont, who claims to have made an extended study of all the influential Russian military books and writings, said that however silly the idea of victory may seem to us in the West, the Russian military machine is working on the assumption that victory is possible and is preparing for nuclear war on that basis. There has been much controversy as to whether it is wise to build shelters to protect the public should nuclear bombs be used. Six bombs, it is said, would put England out of action for all time. Only a few privileged people, notably officials, could possibly be protected and after an attack life would become a nightmare.

The possibility of war is proving an aid to recruitment to the Society known as EXIT which has recently published a booklet giving details of five different ways of committing suicide painlessly. It is not available in shops, or even to members unless they have been members for three months. The dangers of such a

book are of course considerable. Its possession might lead to suicides in periods of depression and it might prove a handbook for would-be murderers. In a letter to the *Times* (23 Oct, 1980) Miss Lesley Chamberlain explains why she and, she believes, others are joining this growing society. If nuclear war should break out, she says, the lucky ones will be those incinerated in the initial blast. To be a survivor will be "a living death", a "hell on earth". Advice on suicide is necessary "to save ourselves and our loved ones from a slow agonizing death". (See Lk.21:25-28; 1 John 4:18.)

#### ULTIMATE WEAPON

According to an article in the *Times* (3 Jan, 1981) NASA (National Aeronautics and Space Administration) officials are now considering which of a number of proposals can be fitted into the agency's long term plans. One very serious project is to use telescopes and radar to detect any asteroid or comet which may be on collision course for the earth, and, if need be, to dispatch a missile, perhaps with nuclear bomb attached, to deflect the intruder. This proposal, which seems highly desirable, is being discussed under the name *Spacewatch*.

Many asteroids are now known to have orbits which intersect that of the earth. It is known that there have been collisions in the past (Arizona, etc.) and even within the present century there have been several rather uncomfortably close asteroid misses by "earth-gazers" together with one hit by a comet in 1908. Science ought to make it possible to foresee and prevent collision catastrophes.

However, with the present tensions between nations there is no certainty that work along these lines will be used as planned. By altering the course of an asteroid which is nearly but not quite on a collision course, it might well be possible for one country to ensure the landing of an asteroid on another country's territory. In fact both America and Russia might play the same game, each hoping for a pre-emptive strike. (This might well prove to be the explanation of Rev. 8:8-12.) Suggestions of this kind have long been in the pipeline. Dandridge Cole, a missile and space vehicle specialist, stated long ago (*Times* 20 Jan, 1962) that it was "theoretically possible to divert a small planet out of its orbit and send it crashing into a predetermined target on earth". He reckoned that both the USA and the USSR would be able to do this by 1972. "It was difficult to conceive of any military device more destructive or decisive than the asteroid weapon. It would hit the earth with a violence equal to millions of hydrogen bombs" said Mr. Cole.

## ATOMIC ENERGY

The difficulty of disposal of wastes is a strong argument against the exploitation of atomic energy. It seems quite possible, however, that the earth is so made that disposal is not too difficult. We have earlier referred to the possibility of placing wastes in the thixotropic sediments which fill deep sea trenches where they will be carried downwards into subduction zones (see this JOURNAL 99, 86). Attention has now been drawn to another possibility (*New Scientist* 24 Jan. 1981 p.236). Curious reversals in layers of the suboceanic crust have been discovered in the Eastern Pacific. The result has been the formation of a large undersea sink. In an area near the Galapagos Islands at a depth of 3000 metres there is such a basalt layer. Under this (instead of above it as is usual) there are pillow shaped masses of lava together with much flint rubble. The water pressure here is much lower than in the ocean above the basalt layer. Water was sucked down through the bore hole at 40 gallons a minute into the aquifer below. If toxic chemicals and nuclear wastes were put into the aquifer it would appear that they would be well out of the way.

An article in *New Scientist* (12 Feb. 1981, p.402) puts the case that, "For many developing countries nuclear power is simply a matter of survival." Dr M.A. Khan who heads Pakistan's Atomic Energy Commission, points out that in his country there is literally no other source of power now that the cost of importing oil is becoming prohibitive. At most 30% of Pakistan's needs might be met by constructing dams in the North of the country, but their cost would be very high and the possible sites are mostly in seismic regions.

## WORLD POPULATION

It is believed that in the year 1650 there were around 100 m people in Africa, a number which did not change much over the next 200 years. By the beginning of the present century the number had increased to 120 m, today it is 470 m, medical science having both reduced infant mortality and increased life expectancy. It was hoped that family planning and education would help to stabilise the population once more but in black Africa this is not the way things are turning out. In Kenya primary education is now available for everyone and 90% of Kenyan women know something about contraception, though of married women only 6% regularly use a modern method. "But most Kenyan women simply do not want to practice contraception. Among women with six living children, only 25% report that they want no more, and among women with eight surviving children, less than half generally want to call a halt." Their usual desire is to have "as many as possible". The effect of education is to make them more conscious of

nutrition and hygiene thus helping them to prevent "pregnancy wastage". In Kenya the birth rate is now 53 per 1000 and the death rate 14, which is equivalent to a doubling of numbers every 17 years while 54% of the population is now aged 15 or less. Though rather more pronounced in Kenya than elsewhere, the general picture for black Africa follows the same pattern. Because, increasingly, population growth exceeds the rate of increase of food production, a lowering of living standards can hardly be avoided. Black Africa is regarded as the most impoverished region on earth but demographers draw attention to the good news that in Asia and Latin America growth rates, though still much too high for the maintenance of living standards, are now declining. (Norman Myers of Nairobi, *New Scientist*, 18 Sept, 1980, 848-851)

#### POVERTY, WEALTH & FOOD

An alarming feature of present trends is not only that world population is increasing, but that people are moving into the great cities, especially in the developing countries. In 1950 there were only six cities with populations of over five million, today there are 28 and by the end of the century it is estimated that there will be 60. By then Mexico city is likely to be the world's largest city with over 30 m inhabitants. (*Times* 3 Oct, 1980) Dense populations make for political instability, and, when catastrophe takes place, it is impossible to organize adequate rescue operations. Morally, too, vice prospers in cities.

The growth of cities is closely connected with the present world food shortage. "This insufficiency of food is caused not by lack of land or by lack of know-how", says Lord Walston (Letter, *Times* 26 Jan.1981) "It is caused by the fact that food production has been traditionally, and still is, at the bottom of the social and economic scale." Because, in the Third World, the standard of living is higher in urban areas than on the land "the brightest boys of the village make their way to the towns rather than staying on the land and growing the food." Even when adequate food is available in the poor countries (eg East Africa and Brazil) the poor cannot pay for it and it is exported to rich countries. The basic trouble seems to be that "investment in agriculture brings in a lower return than does investment in industry".

Report after report confirms that in nearly all countries the rich are getting richer and the poor poorer. "Even where average incomes are supposed to have increased, as in Ethiopia, Kenya and Zambia, it appears that real earnings of the poor have fallen" (Report from Kampala, *Times* 19 Aug, 1980) Vast sums are contributed by the West in aid to the poorer countries but in a BBC Horizon survey (20 Aug, 1980) it was said that little of the



food given goes to help those who need it: most of it finds its way into the shops which cater for the well-to-do. The government of Bangladesh in particular is kept in being by the support given in aid which never reaches the hungry. (Cf. Jas 5:2)

So far as food supplies are concerned a new threat now looms on the horizon. As mineral oil becomes scarcer and its price rises, farmers will be faced with the choice of growing cereals to make alcohol (for use in petrol engines), other crops (eg. sunflower) to make vegetable oils (for use in diesel engines) or food crops to feed mankind. Brazil and USA are already growing crops for conversion to alcohol on a large scale. Since 1950 new land made available for food crops has increased only one fifth as rapidly as world population so that with new outlets for crops world food shortages are bound to increase. (Articles in *New Scientist*, 3, 20 Mar and 18 Sept. 1980, 866-868 etc.)

#### "CIRCLE OF THE EARTH"

A recent well-documented paper ("The Figure of the Earth in Isidore's *De rerum natura*", *Isis* 1980, 71, 268-277) by Wesley M. Stevens is of considerable Christian interest. The commonly held idea that in the middle ages the earth was supposed to be flat like a penny is without foundation though sometimes, in reading old books, this impression is given because the circle is used to show the shape of the earth in two dimensions. However school books in ancient Greek, Roman and medieval times all speak of the earth as a globe and of the heavens as a sphere. It has been imagined that a clay tablet of the 6th or 7th century BC found in ancient Sippar in southern Babylonia represents the shape of the heavens with the earth floating like a disk on a cosmic sea. This interpretation is improbable since the text above the design is not concerned with cosmology at all but merely details the exploits of Sargon of Akkad. The design may illustrate a scene in one of his campaigns. Otherwise evidence of the disk-shaped flat earth concept is lacking among Mediterranean peoples. No surviving fragment of pre-Socratic writing requires the notion of a disk-shaped earth, nor has evidence of such an idea been found among the Egyptians or Hebrews. The notion that the writer of Genesis 1 followed the Babylonian notion of a flat earth, so congenial to some liberal theologians (eg. Peter R. Ackroyd in *The People of the Old Testament*, 1959, p 165 says that the Babylonian picture of the flat-domed earth gave rise to the "Hebrew idea of the world"), is not factually based.

Though many ancient writings describe the earth as a sphere the earliest actual diagram which has survived is that of Isidore in his *De Rerum Natura*, a school book intended as an outline of the knowledge expected of an educated man in 7th century Spain. A spherical earth implied that there might be intipodes

(antipodes are *people* and not poles!) upside down opposite to us. Isidore, in common with many of the ancients, doubted if such people existed, but the idea was never condemned by the Christian church. That he believed in a spherical earth is shown by his use of the word *globus* to describe it and by his description of how the shadow of the earth thrown upon the moon can cause the latter to be eclipsed.

In rare cases the idea of the earth as a globe was ridiculed, as by Plutarch (ca AD 90-125). Lactantius, a heterodox Christian (AD 284-317) followed Plutarch in this, but neither he nor Plutarch suggested any other possible shape for the earth. In later times Copernicus cited him, "For it is known that Lactantius ... writes very childishly about the shape of the earth when he scoffs at those who affirm it to be a globe."

Stevens discusses the three biblical passages which refer to the circle of the earth - especially, Is. 40:22, "The Lord sits on the circle of the earth" RSV, ("He sits enthroned above the circle of the earth" NIV) (Cf. Job. 22:14; Prov. 8:27 where the same word could be translated circuit, arc, compass or orb.) He concludes, "It seems unlikely that any of the three biblical authors intended thereby a two-dimensional description of limited space, but rather a figure of enormous range. It is in this latter sense that Greek and Latin commentators and translators took the term before the Enlightenment's inappropriate demands upon the language."

#### WASTE

Now that attention is being paid to the appalling waste of natural resources many people are looking back to the waste of the past. In an article in the *New Scientist* (20 Nov. 1980, p.499 f) we learn that US oilmen were sometimes content to extract as little as 5% of the oil from a reservoir and did it "so crudely that the remaining 95% is now almost impossible to extract economically". Roughly 450 billion barrels of oil have been discovered in the US of which 115 billion barrels have been extracted and 34 billion barrels are potentially extractable, but 301 billion barrels are out of reach at the moment. In other parts of the world the story is the same, though the US is the chief culprit. Added to the loss of oil as a result of poor extraction methods, is the loss of gas, vast quantities of which have been and still are being flared off.

The story of coal in England is not dissimilar. (*New Scientist* 30 Oct. 1980 p. 316). In the late 1830s coal consumption increased rapidly but by this time most of the more easily mined seams had been worked out. At that time coal in the form of large lumps fetched a higher price than small coal and mines

which were unable to sell their small coal burnt it at the pit head. Nearly a third of the best coal produced near Newcastle was destroyed by burning: 300 million gallons (coal was then measured by volume) was lost annually in this way in this area alone. As a Christian Rev. William Buckland in his *Geology and Mineralogy Considered with Reference to Natural Theology* (1836) deplored this "wanton waste on a fiery heap perpetually blazing near the mouth of almost every coal pit in the district". "This highly favoured country has been enriched with mineral treasures in her strata of coal incomparably more precious than mines of silver or of gold. From these sustaining sources of industry and wealth let us help ourselves abundantly and liberally enjoy these precious gifts of the Creator; but let us not abuse them or by wilful neglect and wanton waste, destroy the foundations of the industry of future generations".

An American study of food wastage published in 1977 (see *Times* 28 Sept. 1977) showed that the amount of food wasted in the USA is enough to feed 50 million people, more than half the waste resulting from food thrown away by private households. The biggest wasters were not the rich or the poor, but middle income families who threw away nearly a quarter of the food they bought. Institutions such as schools were even more wasteful. "More than half the food thrown out is not table scraps but pure waste — half loaves of bread, untouched fruit, half bags of vegetables and in some cases unopened packages of food."

#### ISLAM

Prominence has been given to the Universal Islamic Declaration of Faith (published in full in the *Times* 14 Ap. 1980). The gap between this and the actual behaviour of Muslims (alas — Christians behave no better) was pointed out by C.R. Bagley (Letter, 18 Ap.) "The ideal of man's brotherhood seeks and finds its realization in Islam" says the Declaration. But after thousands of Shi'ite Moslems were expelled from Iraq by their Sunni brethren, Iraq declared war on Iran. "Islam ... confers on all human beings ... freedom of worship, expression, movement and thought" says the Declaration. But a large ethnic minority in Bangladesh is even now being persecuted, murdered and imprisoned because they are Christians, Buddhists or Hindus, or simply because they are ethnically different.

In an article entitled "Are Muslims resistant to the Gospel?" Dr J.D.C. Anderson, who has worked as a doctor in Islamic countries for twenty years, concludes that they are not, provided they are shown Christian love and understanding. He quotes from Michael Nazir Ali of the Theological College in Karachi who, in a paper on "A Christian assessment of the cult of Muhammad-veneration" concludes, "Many Muslims are coming to the conclusion

that though Muhammad may be admired as a great leader, as a founder of a new civilization, as a clever military commander and even as one with a certain amount of religious insight, nevertheless as far as veneration is concerned he comes a poor second to Jesus. He does not seem to be a person one could follow in the spiritual sense, he does not inspire imitation, he has too many worldly concerns to be a model of life devoted to God. Jesus on the other hand strikes them as one who has indeed surrendered all to God and was in this sense the truest Muslim. Muhammad then may be accepted by them as the founder of their culture, but it is a figure like Jesus that they want for spiritual veneration. And so it may be that the veneration of Jesus as the Logos which was transferred to Muhammad by over-enthusiastic mystics may yet return to its rightful owner" (*Christian Graduate*, Mar. 1980 pp. 6-11).

#### CRYING

"Jesus wept" (Jn. 11:35). He was not a Stoic and He was not ashamed of tears. It is unlikely that God, as Creator, would have made us capable of crying if this is a purposeless activity: much more likely that crying is a method of ridding the body of chemical compounds formed as a protection during periods of stress. William Frey of Minnesota expresses this view in evolutionary terms ("Evolution does not tend to favour useless purposeless functions") and has been comparing tears produced in an emotional situation (volunteers wept as they watched a highly emotional film) with tears produced by chemical irritants (onions etc). Biochemically the two types of tears turn out to be different and their study is being continued. It is suggested that those who condition themselves not to cry, especially men in Western societies, make themselves more susceptible to stress-related diseases such as peptic ulcer. (*New Scientist*, 7 Aug. 1980 p.451).

The subject of crying does not often surface in scientific literature. However, Dr James O. Bond of the Florida State Board of Health, in speaking to the American Chemical Society in Miami in 1957, made suggestions which do not differ widely from the above. (Reported in *Science News Letter* May 4, 1957). On average women live longer than men and in the 64 leading causes of death male rates are higher than female with only nine exceptions. Bond suggested that this is because women cry more than men, thus relieving emotional tensions: men on the other hand are conditioned not to cry and have not found a substitute for tears.

It is interesting to note that, according to J.A. Thomson and P. Geddes (*Life: Outlines of Evolutionary Biology*, 1931, p 252) apes etc. are not known to cry. Perhaps more up-to-date information is available on this.

## ALCHEMY

A new and delightful book on alchemy - well referenced, pleasingly printed and profusely illustrated - has recently appeared (Alison Coudert, *Alchemy the Philosopher's Stone*, Wildwood House, 1980, 20 x 25.5 cm, PB, 239 pp, £5.95) It is a real must for anyone interested in the subject.

Western alchemists, or 'puffers' as they came to be called, were of two kinds. Some, who often cheated, aimed to make gold to enrich themselves: others were deeply spiritual men who despised wealth and wished only to benefit mankind. Of these many would travel the earth in search of adepts who might help them understand enigmatic alchemical MSS. Did they ever succeed in making gold? To one who is trained in science, it is inconceivable that by heating their strange concoctions for months, even years, on end they could ever have turned base metals into gold. Yet reading the old stories - especially the well known one of Helvetius which is here reproduced in full - it is almost equally difficult to believe that they did not sometimes succeed. Is it possible that the God who said "the barrel of meal shall not waste, neither shall the cruise of oil fall" (1 Ki 17:14) or turned water into wine at Cana in Galilee sometimes, but only very very rarely, rewarded the faith of these men in the way that they desired? It is hard to say. At all events, for the true alchemist of the West alchemy was not *just* chemistry: it required passionate prayer, self discipline of a high order, and love of one's fellow men.

In the chemical operations of alchemy the pious adept saw an enactment of our Lord's words: "Except a corn of wheat fall into the ground and die, it abideth alone: but if it die it bringeth forth much fruit" (Jn 12:24) Again and again he saw shining metals disappear in acids, or beautiful crystals disintegrate as they melted or dissolved. Then all was dead. But by the arts of chymistry the forms appeared again, often with an added lustre after chymical purification.

In those days the world was not divided - the living and the dead, religion and science - as it is to us today. All the minerals, all the chemicals, even the retorts and the fires were alive. Slowly, very slowly, the metals were rising in the Chain of Being, until one day in the far far distant future they would all become gold. But alchemy could hurry things up. This view seemed so reasonable in those days. For, after all, transformations could be seen every day. The caterpillar turned into the butterfly; the food which the peacock pecked at turned into its feathers; the food we eat turns into us. Was it at all strange that base metals should turn to gold? Or, in a world where science and religion were united, that prayer and fasting should hurry things up?

In his writings the alchemist expressed himself in emblems. Fused with antimony, called the ravenous grey wolf, every metal lost its lustre, save gold, the lion, often compared to Christ. A thousand other symbols were employed: their interpretation is often difficult but the ideas of death and resurrection are always there. The use of such imagery seemed natural enough: as Christians we are reminded of the strange heavenly animals mentioned in the books of Daniel and Revelation: one of them, looking like an eagle, even holds a harp!

Christians of the past were sometimes favourably disposed toward alchemy. "I like it ... for the sake of the allegory and secret signification, which is exceeding fine, touching the resurrection of the dead at the Last Day". As in the furnace of fire "carries upward the spirit" [distillation] leaving the dregs behind "even so God, at the day of judgment, will separate all things through fire, and righteous from the ungodly". So wrote Martin Luther. But sometimes, alchemists veered toward gnosticism or sought to win salvation through their chymico-religious views which found no favour among orthodox Christians.

In China, especially from the 4th to the 9th centuries, alchemy flourished. But there gold-making was a mere sideline. Alchemists selfishly sought the elixir of life for themselves, that they might live for ever. Stories circulated of some who were 2000 years old. It seemed obvious that gold, cinnabar, and other durable minerals would make men durable too: many died through drinking poisonous concoctions made from minerals. When they felt the agonising pains of metal poisoning they knew that the elixir was at work and were encouraged to persevere! The spiritual side of Western alchemy had no parallel in China.

There is much else of interest in Dr Coudert's book. There is a chapter on Jung's theories of alchemy; the hatred of smiths in ancient times is discussed in connection with the belief that the metallurgy of iron had a demonic origin, a view not taken in the Bible; attempts to see visions of the creation in chemical operations are mentioned; it is noted that the early scientists mostly believed in alchemy (Newton, who owned alchemical books, wrote 650,000 words on the subject and worked hard at his furnace); the question is raised as to why the alchemists were deceived when reliable tests for gold have been in use since BC 500 (it is suggested that alchemists made gold-like alloys but probably thought that when it seemed that their prayers had been answered, it was akin to blasphemy to apply tests - Christians take note! 1 Jn. 4:1). The book ends on a somewhat mystical note suggesting, rather unconvincingly, that developments in science are now leading us to an oriental view of the world. One might have thought that a better case could be made the other way.

Modern man has come a long way from the world of alchemy. Yet the Christian who loves his Lord and loves his science too, will not feel that the gap is all that wide. We too can pray passionately when we do a new experiment, not now that gold will come tumbling out of the beaker, but that we may understand what we see and that the knowledge we gain may be used in the service of God and man.

## ERRATA

- p.49 For 'Alan Howard' read 'Alan Hayward'  
p.75 1.2\* For 'magnetic' read 'magnetite'  
p.87 1.7 For 'improbabilities' read 'probabilities'  
p.129 1.8 For 'is' read 'its'

\* from bottom

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We have been informed that the price of Dan Wonderly, *God's Time-Records in Ancient Sediments* (see review, this vol. p.141) has recently been raised to \$7.00.

## SHORT NOTES

*Apes and Language.* In *Scientifically Speaking* (Radio 3, BBC., 5 Nov. 1980) John Maddox interviewed Noam Chomsky whose studies on the nature of language have transformed modern views on the subject. Maddox asked him what he thought of the attempts to teach chimpanzees to speak. Chomsky replied, "I think the ape studies have demonstrated at great length what any rational person should have assumed to be the case in the first place, namely that they simply don't have a language facility otherwise they would be speaking, and that the reason why the studies with apes have been a total failure is ... It's just like teaching human beings flying and they're not going to be able to do it. In fact this is very unsurprising. If it turns out that you could break this barrier with chimpanzees we'd merely be facing a biological miracle. It would be like finding some species of bird which was perfectly capable of flight but it never thought of flying till some experimenter came round and told it 'You can fly!' ... The ability to use language surely has an enormous selectional advantage and the idea that apes have this capacity but never thought of using it is *very* unlikely and in fact the evidence seems to indicate that it's an absolute barrier".

*Gravity Waves.* We have previously referred to Joseph Weber's work in 1969 (this JOURNAL, 99, 175) which led him to believe that he had detected gravity waves. Despite many attempts it has not been possible (save once - by R. Drever of Glasgow University in 1972) to confirm this effect satisfactorily. The general opinion of physicists is still that gravity waves must exist but that thus far the instruments used to detect them are insufficiently sensitive. A review of the work which has been done to date has recently been published by the Cambridge University Press (Paul Davies, *The Search for Gravity Waves*, 1980).

*The 8- and the 16-year Olds.* The Farmington Institute have published some work by Dr Leslie Francis, an anglican clergyman, psychologist and teacher, who has been studying loss of faith by children. Britain's 8-year olds are very religious and nearly unanimous in believing that God exists and that He is personally interested in their well-being but, by the age of 16, they are for the most part unbelievers. The proportion of unbelievers at school-leaving age in 1980 is higher than that of those who left school in 1975 and this in turn is higher than that of those who left in 1970. Dr Francis has graphed religious belief from the age of 8 to 15 and finds a straight line relationship.

It has been customary to associate loss of belief with the beginning of puberty, with change in patterns of socialization, with the onset of rebellion against parental authority, or with



intellectual development. But Dr Francis argues that none of these factors, alone or (apparently) in combination, will account for the straight line graph.

Despite compulsory religious instruction in schools it seems that the church virtually loses touch with the young by the time they leave school. Clifford Langley, commenting on these findings, wonders if it would not be better if RI were no longer included in the school curriculum. "If a child is going to reject something anyway, it might be better not to offer it to him, because the rejection could set up a habit of hostility for the rest of his lifetime. Religion becomes 'that which I rejected between the age of 8 and 16' ... The sentimental piety of the infant school may be an indulgence the churches would be better to forego, if they do not want the door slammed on religion at 16" (*Times* 3 Nov. 80).

*Reincarnation?* Stories of people who 'remember' what they did in previous lives are not uncommon, but they are exceedingly hard to check. A case which has attracted much media publicity is that of Ann Dowling, a Liverpool housewife, who under hypnosis regressed to Sarah Williams, a 19th century foundling of Liverpool and reminisced about some astonishing items of obscure local news of the 1840s and 50s. A convincing case, it would seem, for memory of a past life. But according to Richard Mould the 'convincing' facts are all available in cheap paper backs in Liverpool shops, especially in *An Everyday History of Liverpool* published at 50p which is a school book used in the area and not in the least obscure. A number of other books about the history of Liverpool at that time are also available cheaply ("Is Hypnotic History a Hoax?" *New Scientist*, 15 Nov. 1979).

*Bullfighting Morality.* A letter by Martin Offer under this heading appeared in the *Times* recently (3 Jan. 1981). Fox hunting, vivisection, whaling and even factory farming and the culling of seals in remote regions of Canada are presented by the media as highly contentious issues but "bullfighting appears to retain a public image of romantic ambivalence". It is regarded as a colourful Latin tradition which merely offends the sensibilities of dispassionate Anglo-Saxons. Within the EEC this "ritual tormenting to death of bulls in Europe ... goes virtually unchallenged". British tourists often attend the spectacles untroubled by pressure groups or demonstrations.

*Providence.* Minutes of the British Chiefs of Staff for 1948 have recently been declassified. Military chiefs were concerned as to what to do if the Russians, attacking Germany from the East, were to confront the Allies attacking from the West and march into France. The British decided that it would be best to retreat and

hold the Russians at the Rhine. At ministerial level they had doubts about the wisdom of using atomic weapons. The Americans, however, were trigger-happy and decided that they would withdraw from Europe and use atomic bombs against the Russians. Providentially the Russians did not attempt to advance too far, otherwise atomic weapons would probably have been used in Europe. At that time the Americans had a monopoly of the bomb, the first Russian atomic bomb was not exploded until August 1949. (*Times* 18 Aug. 1980)

*The Evolution Muddle.* The muddleheadedness of many of the scientific fraternity was never better shown than by recent correspondence in the *New Scientist*. Reference had been made to Karl Popper's view that a theory, to be scientific, must admit of possible falsification. The writer of one letter (A.J. Lowry 31 July) says, "Karl Popper is simply wrong to assert that evolution is not a scientific theory. It is quite easy to imagine how the theory might be falsified by observation: for example by the discovery of human bones in Carboniferous rocks." But if such bones were to be found, the evolutionist would merely claim that present theories of the evolution of man are wrong; man came on the scene much earlier than had been supposed but he evolved none the less. In such discussions the meaning of the word "evolution" is neatly switched from one meaning to another without warning - in this case from a creative principle in nature to particular theories about how/when man was evolved.

*Tolerance.* Dr John Habgood, the Bishop of Durham, has recently raised some important points about tolerance. (Reported, by Clifford Longley, *Times* 22 Sept, 1980) Tolerance is a redeeming feature of the British but rare in the world at large, he says. Our national dislike of intolerance makes it difficult for extremists to flourish in Britain. But tolerance could easily be lost and, once lost, its re-establishment would be difficult. Outwardly there is a resemblance between those who respect other people's right to be different and those who are apathetic or interested only in themselves but, with the preponderance of the second group, a severe economic recession might prove a severe challenge to the spirit of tolerance. Dr Habgood stresses that tolerance cannot survive by itself and can thrive only in a community united by some far more fundamental common bond. "He argues that there is not a single free nation in the world which has managed to hold a pluralist society together without 'some very powerful unifying factor'" In Britain in the past there have been two such unifying factors, the church and the Crown, but the role of the church has now declined and the Crown is now "almost the only effective symbol of national unity", - though the unifying influence of the Christian churches is still by no means negligible. For pluralism to work there must be an agreed

sense of moral identity and purpose which can be derived only from a Christian spiritual inheritance but in which the Crown is a direct participant. Were this sense to be lost it is inconceivable that humanism, or any other claimant, could move in to fill the vacuum.

*Scientific Snobbery.* Sir Frederick Dainton, in his Presidential address to the British Association held at Salford 1980, referred to the tradition in this country among pure scientists of fancying that because their minds are preoccupied with concepts and theories, they are in some way intellectually superior to engineers and technologists. This form of snobbery is foreign to other countries, he said, and we have paid a high price for it; for manufacturing industry has been deprived of talent. Snobbery in science is no new theme. G.N. Lewis comments on it in his *Anatomy of Science*, (Yale UP, 1926, p. 170,) pointing out that scientists tend to live in a caste society: each seeking to imitate the sciences above in order of rigorous thinking, and to ignore those below. Liam Hudson's *The Cult of the Fact*, Cape, 1972, describes this happening in Oxford and Cambridge.

*Whither Education?* As knowledge increases, those whose job it is to impart it tend increasingly to forget about the fundamentals and to concentrate on more and more exotic and advanced aspects of their chosen disciplines. We have heard of an American beginner's text in chemistry which, on page 1, shows a test tube and explains which way up it should be held, and on page 2 delves straight into the uses of MNR (magnetic nuclear resonance). The new educational methods have led to many complaints and much discussion. The final outcome is a generation of graduates with minds filled with advanced theory, but ignorant of the basic fundamentals on which their knowledge rests. In addition, as an industrial chemist complains, there is increasing unwillingness to experiment. "Young chemists ... produce theoretical arguments as to why something will not work and when I insist that they try it and they then sometimes find that it does work, they are able to find equally cogent argument to explain why it does" (J.F. Hodgson, *Chemistry in Britain* 1979, 15(3), 124). Chemistry, like all science is full of the unexpected as evidenced by accident reports and serendipitous discoveries in many fields. It is all too easy to declare dogmatically what can or cannot happen — a point which is relevant in discussion of Biblical miracles.

*Tourism and Animals.* The failure of man to take seriously his responsibility as a guardian of nature has recently come to the fore in connection with tourism. Only 500-1000 monk seals now remain in the Eastern Mediterranean, mostly in the Aegean. Holiday makers have taken over the beaches where the seals once

mated and reproduced in peace with the result that their numbers are decreasing rapidly. Marine turtles, too, can no longer find secluded beaches where they can mate and lay eggs which are unlikely to be disturbed until hatching time. Many other species endemic in the Eastern Mediterranean are also vulnerable. It is hoped that agreement will be reached among the 18 Mediterranean countries on the creation of protected areas where endangered species can feed and breed in peace. (Report from Athens, *Times*, 14 Oct '80).

*Neutrinos.* A recent suggestion, based on new experimental work in Russia, that neutrinos may after all possess a small mass, has been much publicised. (For an article on the subject see *New Scientist* 10 Jn. 1980 p. 308). According to theory there should be 100 m times as many neutrinos as all other particles in the universe put together so that if their mass is 10 electron volts or more they may account for most of the mass of the universe. In this case the universe could be 'closed' (which means that it will not go on expanding for ever but will be drawn together again gravitationally after the energy of the big bang has been expended. Cf. Heb.1:12).

*Genetic Engineering.* A ruling by the Supreme Court of the US (*Times* 18 Jn 1980) to the effect that new forms of life are patentable is an encouragement to genetic engineering. This may not always be conducted responsibly, especially in small get-rich-quick firms. The dangers of genetic engineering may well have been exaggerated in the past (see this JOURNAL 103, 68): certainly they are not negligible, but neither is the potential good that may result (see 104, 94).

*Astronaut's Bible.* Walter Langbein, described as a post-graduate student in evangelical theory at the University of Erlangen, Germany, has retranslated the book of Genesis from Hebrew into German. Elohim in Genesis has always been translated as *God*, but as it is a plural form Langbein translates it *gods*. Here are some typical verses. "And the gods said; let us make man, someone like ourselves, to be master of all life upon earth and in the skies and in the seas. So the gods made man in their own image"; "The gods took Adam's source of life (i.e. his chromosomes) and made Eve"; "Eve called her son Seth, the implanted one, because the goods implanted alien sperm cells instead of Abel whom Cain killed" — a clear example of artificial insemination! One can only comment that if in the beginning the gods or space men created the heavens and the earth they were wonderfully clever! Mr Langbein says that he is still a committed Christian. "I am to become a minister next year and I think that the fact that the gods who created mankind were space visitors simply proves Almighty God to be even more Almighty than we previously realised." (Reported in *Alpha*, 1980 No. 6, p. 7).

DAVID A. BURGESS

PARADIGMS, PROGRAMMES AND  
PROGRESS IN SCIENCE

In this paper, given at the VI Symposium on the Interactions of Christianity and Culture on 24 May 1980, Mr Burgess outlines the views of Popper, Kuhn, Lakatos and Feyerabend on the nature and development of science. He draws attention to prevailing divergences of opinion and asks what Christian attitudes should be.

August 1945 marked a watershed for science. On the 6th a uranium fission bomb was dropped on Hiroshima, followed a few days later by a plutonium bomb on Nagasaki. Suddenly even the most scientifically illiterate became aware of the extent to which science was involved in modern life -- and death.

There was an immediate 'gut' reaction of shocked revulsion against what scientists were doing.

This was followed in the post-war years by the rise of numerous pressure groups such as CND, BSSRS, The Medical Association for Prevention of War, expressing concern about the implications for society of scientific and technological 'progress'.

The past decade or so has seen increasing questioning of a much more fundamental kind: not merely the role of science in society, important as that concern is, but a serious and sustained attempt to evaluate the very nature of the scientific enterprise and of what could be meant by 'progress' in science.

Philosophical attempts to rationalise the nature of scientific knowledge have, of course, interested philosophers for many years. The translation in 1958 of Karl Popper's *The Logic of Scientific Discovery*<sup>1</sup> which refuted Baconian principles of induction, seems to have resulted in at last removing discussion of the philosophy of science from an arid intellectual level, remote from the concerns of practising

scientists, to the context even of school science.<sup>2</sup>

Of the more influential of the post-WW2 philosophers of science, Popper, Kuhn, Lakatos and Feyerabend, especially the first two, are outstanding. I shall attempt to outline their contributions briefly. But first I shall say something about the nature of induction.

### *Baconian Induction*

Francis Bacon (1561-1626), abandoning the deductive logic of Aristotle and the schoolmen, first introduced the idea of scientific induction. Truth was not to be dependent on authority; rather it was man's duty to learn from nature. Theories were to be constructed on the basis of ascertained facts and preconceived notions were to be discarded.

Induction is a way of thinking in which a generalisation is derived from observations of particular instances. According to this view, a 'law of nature' is a summary of past experience. As observation becomes more refined and the number of facts increases, inductive generalisations or 'laws' are developed of ever-widening scope. Science is thus a continuously-growing body of reliable knowledge.

In recent years, however, induction as the main principle of scientific thinking has been heavily criticized. A useful summary of objections is given by Chalmers<sup>3</sup>. The most serious criticism is that induction has no logical justification. For example, no matter how many objects have been seen to fall towards the earth, there is no logical ground for believing, or predicting, that an object will do so on the next occasion. The generalisation that heavier-than-air objects, when freed from constraint, will fall towards the earth cannot be logically inferred from any number of particular observed instances. This constitutes the 'problem of induction' as clearly stated by Hume in the 18th century.

There may, of course, be strong psychological reasons for using inductive arguments whether consciously or unconsciously: after all men, and presumably animals too, learn from experience by induction. Nevertheless inductive inferences cannot be justified on logical grounds alone, or so Popper in particular would argue.

Popper avoids the 'problem of induction' by asserting that science progresses by deductive methods. Lakatos adopts a similar view. Kuhn is more concerned with sociological pressures in science, while Feyerabend is vigorously opposed to any stereotype of science, holding to the need for "epistemological anarchy."

Karl Popper<sup>1,5,6,7</sup>

Attempts to assess the nature and methods of science deal with a wide variety of problems which can be conveniently classified as psychological, logical and methodological.

Popper argues that the last two only are the province of the philosopher of science.

(a) *Psychological problems.* These involve matters such as the nature of perception, the immediacy of perceptual knowledge and feelings of "conviction" based perhaps on intuition or induction. Popper refers to attempts to justify logical inferences on the basis of such perceptions as 'psychologism' and considers them invalid as a basis for the logical justification of science. He distinguishes sharply between the process of conceiving a new idea, which involves an irrational element, and the result of examining it logically. He likewise emphasises a dichotomy between "objective science" on the one hand, and "our knowledge" (our awareness of the facts) on the other.

Epistemology is concerned with testing scientific statements by their deductive consequences and not with attempting to derive their justification from (sense) experience, in the manner of the logical positivists.

(b) *Logical Structures.*

Popper sees the initial problem in characterizing empirical science as one of demarcation; that is, agreement on a convention which will distinguish between science and metaphysics.

The now well-known criterion which he proposes is that a system can claim to be called empirical or scientific only if it is capable, in principle at least, of being tested by experience and refuted. Thus, the falsifiability, not the verifiability, of a system marks it out as scientific.

This proposal depends upon an asymmetric relation between verifiability and falsifiability, for although hypothesis cannot be derived logically from the observation of singular facts, no matter how large the number of observations, a single observation is capable of falsifying a hypothesis, provided the observation is reproducible. Thus a million observations of swans which are white does not prove "All swans are white", but a single observation of a black swan would falsify the rule.

The falsifying experiment is usually a crucial one, designed to decide between two hypotheses by refuting at least one of them.

Popper maintains, however, that old theories, well corroborated, are to be retained and tenaciously defended, even if falsified, if they are the best theories that are known at the present time. There must be a "serious struggle for survival" between competing theories, so that the "fittest", in terms of explanatory power and truth content, may survive.<sup>6,1a,4a</sup>

*Corroboration.* A hypothesis is a provisional conjecture, not necessarily a 'true' statement: it is not verifiable but can be 'corroborated.' This is achieved by assessing the tests which the hypothesis has withstood.

Accepted "basic statements" (viz. empirical facts) must not contradict the hypothesis. A corroborative appraisal can be made in terms of the "degree of testability" of the hypothesis (see below), with special regard to the severity of the tests applied in an attempt to falsify the hypothesis. According to Popper appraisal of a hypothesis cannot be made in terms of probability.

Confirmations of a hypothesis have a significance which depends on their historical context. Hertz confirmed Maxwell's theory about electromagnetic radiation when he first detected radio waves. We do the same today with our radios but contribute nothing of value to science.<sup>3a</sup>

Confirmation of a bold 'risky' conjecture is thus more instructive than confirmation of a well-established theory. Conversely, falsification of a novel prediction is of less significance than falsification of an older, well-tried theory.

*Degree of testability.* This is a function of the simplicity of a hypothesis, Popper maintains. By "simplicity" he appears to mean the precision and clarity of a hypothesis.

- e.g. Compare (1) The planets travel round the sun.  
 (2) The planets follow elliptical paths  
 round the sun.

Statement (2) is more precise and therefore more simple than statement (1); it is more "risky" - more readily refutable if untrue. Failure to refute (2) would have a higher corroborative value than failure to refute (1).

*Verisimilitude.* In what sense can we say, within the framework of logic, that one theory is 'better' than another? Popper suggests we might first compare the logical contents of the two theories to be compared. When once a theory has been proposed it will be possible to write down a list of statements which follow logically from it. It will also be possible to list empirically found facts which appear to be inconsistent with the



theory. The logical content of a theory will be a combination of the two lists and will provide a basis for comparison with another theory.

A second factor will be the correspondence of the theory to the facts. The term 'verisimilitude' combines the ideas of content and nearness to truth.

We approach truth in science, Popper states, by successive approximations based on trial and elimination of error, much as a computerised missile or satellite obtains guidance "by the relative evaluation of tentative predictions, precisely of the kind demanded by verisimilitude."<sup>7</sup>

(c) *Methodology*

This is concerned with the 'rules of the game' - with how science proceeds.

The distinguishing mark of empirical (viz. scientific) statements, says Popper, is their susceptibility to revision, irrespective of whether they satisfy certain logical criteria.

Methodological rules are conventions which circumscribe empirical science much as the rules of chess govern games of chess. Just as there is a "Logic of Chess", which is hardly pure logic, so there is a "Logic of Scientific Discovery."

The supreme rule is that other rules of procedure must not protect any statement against falsification.

Popper has in mind auxiliary hypotheses of an "ad hoc" kind which merely serve to "save the appearances" without advancing our knowledge.

In illustration Chalmers<sup>3b</sup> mentions an entertaining exchange that took place in the seventeenth century between Galileo and an Aristotelian opponent. Galileo observed the moon with his new telescope and reported that it was not a smooth sphere - as all celestial bodies were supposed to be according to the Aristotelians but that its surface was covered with mountains and craters. His opponent maintained (*ad hoc!*) that an invisible, undetectable substance covered the surface filling the craters and covering the mountains, to an extent that resulted in an overall spherical shape. Galileo was prepared to concede that such a substance was present, but that it was in fact piled up higher on the mountains!

For Popper auxiliary hypotheses are valueless if they decrease the falsifiability of a theory: to be of value they must be more potentially falsifiable than the original hypothesis or theory.

He considers Pauli's exclusion principle to be an "eminently acceptable" example of an auxiliary hypothesis, whereas the Fitzgerald-Lorentz contraction hypothesis he considers as unsatisfactory because it had no falsifiable consequences.

Popper further maintains that the introduction into atomic physics, by Niels Bohr in 1927, of the principle of complementarity was *ad hoc* and for this reason has remained "completely sterile" within physics.<sup>4b</sup>

*Theory and Experiment.* Experimental work is dominated by theory, according to Popper, and is meaningful only in the context of theory.

What compels the theorist to search for a better theory is the falsification of a theory so far accepted and corroborated. Examples he gives are, (1), the Michelson-Morley experiment which led to the discovery of relativity<sup>8</sup> and, (2), the falsification by Lummer and Pringsheim of the radiation formulae of Rayleigh and Jeans, and of Wien, which led to quantum theory.<sup>9</sup>

The history of science shows that "it is always the theory and not the experiment ... which opens up the way to new knowledge ... it is always the experiment which saves us from following a track that leads nowhere."

*Progress in Science.* How then does Popper see scientific knowledge developing? By bold, unjustified (and unjustifiable) conjectures controlled by attempted refutations using severely critical tests.

Thus science at any given time may be thought of as consisting of theories which experience has shown to be those most resistant to criticism and which therefore appear to be the best available approximations to truth.

Every good theory is a prohibition; the more it prohibits the better it is, for the attempted refutations are more severe as a result.

The task of the scientist is to search for 'true' theories - even if he can never be quite sure that they are true when he discovers them.

However, truth is not the only requirement. We look for "interesting truth - truth hard to come by;" truth which has a high degree of explanatory power - which implies that it is logically improbable truth.

Popper assesses some of the widely held ideas current at the present time in the light of these principles. Freudian psycho-

analytic theory and Adlerian individual psychology he regards as essentially metaphysical, because unfalsifiable.

The Marxist theory of history, he claims, was falsifiable in its earlier formulations, and was in fact falsified. Followers of Marx then re-interpreted both the theory and the evidence to make them agree.

By contrast, Popper considers Einstein's theory of relativity to be in a very different class. His special gravitational theory predicted that light must be deflected by massive bodies such as the sun. This unexpected and "risky" hypothesis was confirmed by Eddington's expedition of 1919.

Popper views the general direction of evolution in science as a "quasi-inductive process." By this he means that each theory is superseded by a theory at a higher level of universality (the "inductive" direction) but not by inductive inference.

The higher theory is better testable and contains the older, lower-level theory, at least to a good approximation.

The higher theory is proposed and tested deductively by means of theories of a lower level of universality.

*Imre Lakatos*<sup>10,11</sup>

Lakatos considers Popper's views on falsification over-simplified. He proposes a form of "sophisticated falsification" whereby not an isolated theory but a *research programme* may be falsified.

A research programme comprises not only a major theory, but all the supporting auxiliary theories: it is the entire structure which is open to falsification.

If such an organized structure leads to novel, unexpected predictions of facts or theories, the programme is said to be progressive, or to constitute a progressive problemshift.

Problem shifts are scientific if they are progressive, at least theoretically so, and are "pseudoscientific" if they are degenerating - that is, do not lead to new predictions.

There can be no falsification before the emergence of a better theory, whatever the evidence may suggest, and considerable hindsight may be needed to ensure that a programme has been in fact falsified.

Like Popper, Lakatos maintains that methodological rules must be introduced to tell us what paths to follow.

These constitute what he calls the *positive heuristic* of the programme. Rules which help us to avoid certain directions of research constitute the *negative heuristic* of the programme.

All research programmes possess a *hard core*. This comprises the general hypotheses that underpin the programme. It is not to be questioned and the negative heuristic of the programme protects the hard core by deflecting research into other areas, notably the protective belt.

The latter term describes the (partially articulated) auxiliary hypotheses which "bear the brunt of tests and get adjusted and re-adjusted, or even completely replaced, to defend the thus-hardened core."

The positive heuristic prevents the scientist from confusion in a "sea of anomalies." It defines a programme involving ever more complicated models which simulate some part of reality - often being blatantly false, but providing fresh insights which can lead to improved models.

Lakatos instances Newton, who first obtained his inverse-square law of planetary attraction from consideration of a fixed point-mass sun with a single point-mass planet. This was developed to allow mutual rotation round a common centre of gravity. Then more planets were added, with subsequent consideration of their shape as spheres. Planetary spin was introduced and finally the non-spherical shape of planets, due to rotation. Newton was fully aware of the limitations of his earlier models but was carried along by the heuristic thrust of the programme.

Refutation of a specific hypothesis is thus seen to be irrelevant. Indeed the positive heuristic may be so powerful that large-scale testing or even consideration of available data may be a waste of time.

Nevertheless, empirical checks are vital, although it may be a long time before interestingly testable versions of the research programme can be formulated.

Science should be a history of competing research programmes with plenty of serious competition, to ensure progress. (cf. Feyerabend).

Competition leads to the question: how can a research programme be eliminated? Only by a rival programme which explains the success of its rival and supersedes it by a further display of heuristic power (explanatory ability). This may become evident only after a long period of time.

For this reason, provided it can be rationally constructed as a progressive problemshift, a budding research programme must not be discarded "because it has so far failed to overtake a powerful rival."

*Progress in Science.* Mature science is seen as a continuing growth based on a progressive problemshift. Research programmes anticipate novelty; they show heuristic power, unlike "pedestrian, trial and error." The positive heuristic shows how to build protective belts and thus generates "the autonomy of theoretical science." i.e. The problems to be investigated are contained within the protective belt and may have nothing to do with current anomalies (contra. Kuhn).

Lakatos claims that Bohr's research programme of light emission, in early quantum physics, was a progressive programme with a remarkable positive heuristic (although based on inconsistent foundations). Eventually, however, the programme degenerated and petered out. A rival programme - wave mechanics - was introduced and soon led to the discovery of new facts. It replaced Bohr's programme altogether by offering solutions to problems which had been completely out of reach of the older programme.

Thomas Kuhn<sup>12</sup>

The historical context of science is essential to the development of Kuhn's theme. In outline his thesis is that, out of a "pre-scientific" era of independent traditions, sometimes conflicting, there emerges a generally accepted professional consensus of ideas and methods - a *paradigm*.

This provides a framework for the development of *normal science* which is essentially *puzzle-solving* within the constraints of the paradigm.

Gradually *anomalies* arise and a state of tension develops which results in a *scientific revolution*: the paradigm is overthrown and a new one introduced. Normal science is again practised for a time until a new crisis develops which leads to a further revolution of thought, and so on.

Genuine scientific advance occurs only during periods of crisis and revolution; for the remaining time scientists are doing little more than marking time.

*Paradigms.* The concept is introduced as a body of accepted theory formally transmitted via text-books and teaching. Paradigms are essentially shared beliefs responsible for the behaviour of a community.

In response to criticism, Kuhn attempted to clarify his meaning.<sup>13</sup> He concluded that he had used the word in two different senses (a sympathetic critic claimed to have found more than twenty!)

(1) The entire constellation of beliefs, values, goals, techniques and so on shared by the members of a given community, including training of their successors: the disciplinary-matrix he called it. In this sense the concept is essentially sociological since it governs not so much subject matter as a group of practitioners.

(2) According to its second meaning, a paradigm is a successful practice -- a productive way of thinking or doing things -- shared by many people. In the course of his training a student will be presented with "practice problems" to solve. These will not only give him proficiency, but will help him to gain an insight into the empirical content of his studies. In Kuhn's language he is inducted into the paradigm.

Engagement with a variety of paradigmatic exemplars enable new relationships to be perceived; analogies are grasped, gestalt signals observed.

This, Kuhn argues, is how scientists themselves often solve puzzles, by modelling them on previous puzzle-solutions.

*Normal Science.* Acceptance of a paradigm (e.g. Aristotle's analysis of motion or Ptolemy's computation of planetary position) leads to mature science, in which practitioners are engaged in esoteric research into problems arising within the paradigm. New sorts of phenomena are not looked for since the paradigm theory not only defines the problems but guarantees that viable ('stable') solutions exist.

"Mopping up operations are what engage most scientists throughout their careers," as they "articulate the paradigm" (explore a relatively small field in depth.) Failure to solve a problem is looked on as failure of the scientist, Kuhn maintains, rather than failure of the paradigm.

*Anomalies.* Although normal science seeks no novelties of fact or theory, new discoveries are of course made. Now and again expectations based on a prevailing paradigm are not realised: an anomaly comes to light.

Large-scale paradigm destruction is preceded by a period of "pronounced professional insecurity" due to persistent failure in puzzle-solving.

Kuhn cites the state of Ptolemaic astronomy prior to Copernicus as one example of such failure, and the attempts to explain light and colour before Newton as another.

He also draws attention to other factors, such as sociological pressures, which may contribute to the breakdown of normal science.

Resolution of the crisis by acceptance of a new paradigm means that the newer not only replaces the old but is "incommensurable with (it); the profession will have changed its views of the field, its methods and its goals." There is now a new universe of discourse - a revolution has occurred.

*Scientific Revolution.* Kuhn draws an analogy between scientific and political revolutions. Prior to revolutions of both kinds there is a growing state of unrest as the inadequacies of orthodox solutions to current problems come to light.

Just as political revolutions aim to change political structures in ways that those structures prohibit, so scientific revolutions aim at paradigm-overthrow in ways that conflict with the reigning paradigms.

How are revolutions accomplished? Not, Kuhn suggests, by an immediate consensus of those involved. He points out that there were few converts to Copernicanism for almost a century after Copernicus' death, and Newton's views were not accepted on the continent for at least fifty years after the "Principia" appeared.

Kuhn likens the transfer of allegiance from one paradigm to another, to a conversion experience; the probability of such an experience notoriously decreasing with age. Instead of group conversion at one time, there is "an increasing shift in the distribution of professional allegiances."

*Progress through Revolutions.* Kuhn denies being a relativist. He appears to accept that objective progress is possible in science, but not towards an ultimate goal - truth. "We may... have to relinquish the notion...that changes of paradigm carry scientists and those who learn from them closer and closer to the truth."

Although we are accustomed to seeing science "as the one enterprise that draws constantly nearer to some goal set by nature in advance," Kuhn questions whether such a goal need be postulated. He suggests that, "If we can learn to substitute evolution-from-what-we-do-know for evolution-toward-what-we-wish-to-know, a number of vexing problems may vanish in the process."

Paul Feyerabend<sup>14,15</sup>

Feyerabend is a vigorous polemicist (in the best sense) who argues against all exponents of scientific methodology. A study of history, he claims, reveals that there is no consistent "scientific method" and the attempts by Popper *et al* to impose or expound one are misplaced. The only way to ensure progress is to take as our motto, "anything goes," - which we may call *epistemological anarchy*.

Feyerabend criticizes science education for isolating domains of knowledge from each other (e.g. physics from metaphysics; both from theology), with a resultant inhibition over boundary-transversal. The would-be scientist is not encouraged to use his sense of humour, imagination, or religion, in his scientific work: even the language he is expected to use is not his own. The scientific facts on which he relies are presented to him as if they are experienced independently of opinion, belief and cultural background. For Feyerabend, however, the world is a largely unknown entity and we should keep our options open.

All universal standards and rigid traditions (and much contemporary science) must be rejected. Uniformity not only endangers the free development of the individual, it impairs the critical power of science, which benefits from a proliferation of theories.

Considerable blame is apportioned by Feyerabend to modern empiricism. Some of its methods "introduced in the spirit of anti-dogmatism and progress are bound to lead to the establishment of a dogmatic metaphysics and to the construction of defence mechanisms which make this metaphysics safe from refutation by experimental enquiry."

Accepted theories should be persistently criticized in a manner which goes beyond the criticism provided by a comparison with the facts - a science that is free from metaphysics is well on the way to becoming a dogmatic metaphysical system.

*Variance of Meaning.* Decision between alternative theories is based on crucial experiments and is to that extent empiricist. However, experiments may fail to achieve their objective unless viewed against a more general background theory, which supplies a stable meaning for the "observation sentences."

Feyerabend argues that this background theory is itself in need of criticism - which implies that observation languages are not stable. Hence, empiricism cannot be made a universal basis of all our factual knowledge.



Since meanings are not invariant, we must not rate their importance too highly. Semantical flexibility - even sloppiness - is a prerequisite of scientific progress.

*Excellence of Science.* A further opinion that Feyerabend states vigorously is that science is not sacrosanct; it is not some special kind of knowledge superior to all other kinds.

He claims that the excellence of science must be argued, not gratuitously assumed. Science should be considered as one form of knowledge or belief among others, e.g. magic, myth, religion.

To this end, science must be separated from the State, just as was the Church in earlier times, and for similar reasons. Feyerabend argues for a "free" society in which each person believes and behaves as he chooses, avoiding all claims to absolute truth, and tolerating the beliefs and behaviour of others.

He believes that the relativism thus advocated would not lead to chaos, any more than the gradual removal of religion from the centre of society did.

In science, freedom from a restricting methodology does not mean, he maintains, that research is arbitrary and unguided. The necessary standards arise from the research process, not from some preconceived pattern of rationality.

These standards are developed and examined by the very research process they are supposed to judge.

Neither does science command special respect because of its undoubted pragmatic success. Competing ideologies may temporarily "run out of steam," but need not be eliminated for that reason. Later they may return in fresh triumph, as happened to the philosophy of atomism.

Unfortunately, Feyerabend says, experts and power groups have succeeded in suppressing ideologies other than that of science, so that the supposed 'superiority' of science is due, not to research, but to political and institutional pressures.

#### *General Comments*

A comprehensive critique of the views presented cannot be given within the confines of this paper, even if I were competent to tackle the task.

Nevertheless, certain points may be made. The obvious one is that, with such widely divergent views from which to choose,

it seems remarkably difficult to reach agreement about the 'scientific method' if such a method exists.

Moreover, the views we have outlined have in the past made little impact on practising scientists.

Medawar<sup>16</sup> notes wryly that "If the purpose of scientific methodology is to prescribe or expound a system of enquiry or even a code of practice for scientific behaviour, then scientists seem to be able to get on very well without it. Most scientists receive no tuition in scientific method, but those who have been instructed perform no better as scientists than those who have not. Of what other branch of learning can it be said that it gives its proficient no advantage; that it need not be taught, or if taught, need not be learned?"

A notable shortcoming in the theses of Popper, Kuhn and Lakatos, who base their arguments upon an interpretation of history, is the paucity of examples used and the almost exclusive reference to physics.

L. Pearce Williams,<sup>17</sup> historian, commenting on the Popper-Kuhn disagreement in particular, asks what practitioners of mature sciences think they are doing (in contrast with what philosophers say they are doing or should do). We simply do not have this information, he says, so that the history of science is unable to bear the load imposed upon it.

The Popperian function of experiment, as a means of falsification or corroboration of a theory; and his view that theory, never experiment, opens up the way to new knowledge, is certainly not that held by P.W. Bridgman, the physicist.<sup>18</sup> For Bridgman, experiments are important for two reasons. Firstly, they make possible the exploration of new territory. Indeed, experiment creates the previously unknown world, as in modern chemistry or nuclear physics - worlds which have no existence outside the laboratory.

Secondly, experiments facilitate understanding; by experiment "we can pick a situation to pieces and analyse it...and thus reduce to order situations which otherwise might be so complicated as to be wholly (in)-tractable."

Moreover, Bridgman argues that it is not necessary to have some clearly stated hypothesis in mind which the experiment is supposed to be testing. In his own work on the effects of pressure, the interest "was almost entirely in discovering what new things there were in fields hitherto unexplored." Although, as he says, there was always some kind of expectation, this could hardly be dignified by the title of 'theory.'

While Popper, Kuhn *et al* have given us valuable insights into the nature of science, the impression they give is that 'science' is a more or less homogeneous activity, whoever is engaged in it. In fact, there is no reason to suppose that the methodology of the theoretical physicist is identical, even in principle, to that of the pharmacologist, and both may well differ from that of the anthropologist.

Mary Hesse<sup>19</sup> points out that, "A science whose aim is application and prediction may have different normative requirements from one which desires truth, beauty or morality. Sometimes comprehensive theories of maximum content are appropriate, sometimes instrumentalist predictions, sometimes inductive inferences. It is a naive reading of the history of science to suppose that different methodologies are necessarily in conflict given their different aims. The logic of science should provide a comparative study of such methodologies, rather than a partisan polemic on behalf of some against others."

In developing the case for a limited form of induction, she says that Popper's view cannot even be stated without inductive assumptions.<sup>20</sup>

*The Non-rational Element.* Max Born<sup>21</sup> is of the opinion that most physicists are "naive realists"; that is, they get on with observing, measuring, calculating, without bothering too much about philosophical subtleties - at least, until they begin to theorize. Probably this is true of scientists in most other disciplines also.

Theorizing, however, particularly at the depth involved in physics, brings up the ancient epistemological problem: to what extent (if any) do our observations of the world give us reliable knowledge of the underlying reality?

Feyerabend<sup>14a</sup> argues in effect that we can never know; the acceptance of one hypothesis in preference to another is little more than a "propaganda victory", in the words of Lakatos.

Kuhn<sup>22</sup> holds that the apparent purposeful design of the human eye and hand is quite illusory. He asks, "What must the world be like in order that man may know it?" and considers the question unanswered - and by implication unanswerable.

Although Popper<sup>4c</sup> views science as a search for 'true' theories, he says we may never know them as true, even if we attain them.

Many others have had similar 'uneasy' feelings about our relationship to the external world. Thus Brillouin<sup>23</sup> quotes

with approval Planck's postulates that (a) there exists an outside world independent of us and (b) this world is not directly accessible to us. (Both are aware of the inconsistency). Brillouin adds, "there is no way to avoid the irrational element in science."

Kant of course held a similar view, and the problem is vividly presented by Ryle<sup>24</sup> who points out that what the neuro-physiologist who studies perception in the laboratory discovers, and what is really there, are separated by a crevasse which no man can bridge. "While at work in the laboratory he makes the best possible use of his eyes and ears; while writing up his results he has to deliver the severest possible censure upon these sham witnesses. He is sure that what they tell us can never be anything like the truth just because what they told him in his laboratory was of the highest reliability."

Thus it seems that 'modern Gnosticism' holds that matter is not so much evil as simply misleading. The issue is one of the degree to which we can trust our perceptions of nature to give us a reliable understanding of the external world.

Nearly half a century ago Professor Butterfield<sup>25</sup> reminded us that, for Descartes, science is based upon theological considerations. We trust our senses and our rational faculties because we believe that God is no deceiver. The order and intelligibility in nature are a natural consequence of a God who is the author of it all (cf. Colossians 1: 15-20 and Genesis 1).

Without being a naive realist (cf. Hebrews 11: 3) the Christian has every right to challenge those who boldly assert that the world is unknowable; how do they know?

There are great scientific names committed to the view that this solid and tangible world, which they have studied in so much detail, is unknowable, insubstantial and quite untouchable...upon this same foundation they base a whole religious scheme, which generally deposes man from his central position in Christian thought... The contention that objects cannot be really touched, though it may indicate a significant aspect of the structure of matter, is nevertheless a red herring for scientific philosophers... Microphysics has no bearing on ordinary tangibility. When a savage strikes a scientist he touches him in the only sense that matters even though his hand be made of electrons and suchlike... The Christian...does not look for insecurity specially in the molecular nature of matter, or in the denial of what little his senses do tell him. Nor does he seek for mystery only in scientific abstraction, for he finds

it in ordinary things, even in matter-of-fact solidity... In this way he avoids the eccentric pessimism which besets those who relegate him to the position of interloper erring vainly in a universe devised as it were by a calculating genius.<sup>26</sup>

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A.G. NEWELL

MODERN TRANSLATIONS OF THE BIBLE AND THE  
STATUS OF LANGUAGE

In this paper, delivered to the Victoria Institute on 24 May 1980, Dr Newell compares six modern translations of the Bible in common use with the AV. He deplores "the lucubrations of mid-Atlantic linguistic bureaucracies", the modern committee English, which spoils much recent biblical translation. Not one of the recent versions compares with the AV in literary quality or in its power to inspire worship.

The expression "lucubrations of mid-Atlantic linguistic bureaucracies" is a quotation from the 'Viewpoint' column in the *Times Literary Supplement* contributed by the poet and critic C.H. Sisson, who was himself quoting Professor David Martin, the sociologist of religion, on the controversy over modern versions of the Bible and the Anglican liturgy. It serves to draw attention to the fact that the trend within the churches and especially the Church of England towards the modernization of the traditional language hitherto used in congregational worship has given rise to widespread concern among people whose business is with the English language and its literature. I am not an Anglican, but I am glad to be able to point to such weighty support in order to prove that my paper is not simply the expression of an isolated and idiosyncratic personal opinion.

Professor Martin was speaking of modern committee English, the language of academe and newspaper, the common speech of government, officialdom and business world, as now brought to the rewriting of the Anglican liturgy and the translation of the Bible. His description suggests a preliminary characterization of our common speech as flat, unrhymic, unimaginative, enlivened if at all only with tired clichés. As Professor Brian Morris points out, there are various 'registers' of contemporary common speech: he gives examples from a law court, a Pakistani shop in Bradford, a building site, an election meeting, a local radio programme and a company

board room. All of them, however, resemble, more or less, the deliberately antirhetorical, unassertive, undramatic, unevocative prose of Samuel Beckett, so entirely suitable as the literary vehicle for his representative vision of contemporary humanity in the age of anxiety.<sup>1a</sup> The literature of an age necessarily reflects, even in reaction, its prepossessions. They emerge, too, in its translations of the Bible.

The theory and practice of translation, which can be taught, as it is by the Summer Institute of Linguistics of the Wycliffe Bible Translators, is perforce included in the new scholarly discipline of linguistics. The sort of situation envisaged as the field where the *science* of translation can be exploited is one where a tribe needs to be supplied with the Scriptures in its own tongue. The *art* of translation seems to me an enterprise of a different order, and I can appeal to the author of a recent treatise for support. L.G. Kelly sees a historical distinction between translation as 'a literary craft' and translation as the creation of 'a text of equivalent meaning', which stems from a difference in purpose. "Those who translate merely for objective information, have defined translation differently from those for whom the source text has a life of its own", he says, and points out that "to the comfortable assumption that language is an instrument, there is opposed the concept of language as a creative entity, as *logos*". He concludes that 'dynamic equivalence' (the attempt to evoke from the reader in the receptor language the same reaction as the reader of the text in the source language) does not necessarily result in 'free' translation, while "few translators are so literal that they eschew dynamic techniques altogether."<sup>2</sup> On the other hand, I am compelled to admit that this balanced judgment differs from that of Rudolf Kassühlke, who believes that translation on 'formal correspondence' lines (seeking to preserve by literal rendering the word order, syntax, idioms and figurative expressions of the source language) is "largely not understandable and in many places actually misleading, while that on the principle of dynamic equivalence, although impossible because of the gap in time and culture between the Bible writings and ourselves, is the only method available to bring the original writers' intention to today's readers."<sup>3</sup>

'The status of language' appears in my title because I believe that contemporary English is debased and contaminated as befits a lost society; it reflects and reinforces the instability, endemic relativism and ironic fatalism of the age. Some years ago Professor A.C. Partridge wrote, "English speech at the present time is unstable, and a suitable language for the supernatural conceptions of Scripture is difficult to imagine".<sup>4</sup> Professor Basil Mitchell concurred when he recently wrote, "The only sort of language that is entirely contemporary and widely available is the language of journalism, and this language inevitably lacks the range, depth, resonance and precision that is required for



translating the Bible or for liturgical use. ...How can language convey transcendence when the cultural assumptions underlying the language effectively deny it?"<sup>5a</sup> So we arrive at the (to me) absurd situation of the heirs of two millennia of Christianity and of more than a thousand years of indigenous English belief, acting as though they can abandon literary in favour of linguistic translation, applying the science rather than practising the art, as if they were the pioneer evangelizers of some remote preliterate tribe, instead of the inheritors of a Christianized culture. As Andrew Louth puts it, "The modern translator, faced with a passage of the ... text, asks himself, 'What would this look like if I were to read it in the *Daily Telegraph* (say)?"<sup>5b</sup> This seems to me a quite frightening abdication of historical and cultural responsibility.

There are those who will believe that it is the opposite - that, in fact, it is a courageous recognition of the level of literacy and of knowledge in our post-Christian society, and a wholly laudable attempt to reach the ordinary people with the Word of God. At this point, then, I must enter my caveats. Nothing I say is to be construed as critical of biblical translators' intentions to make the text as clear as possible for as many readers as possible. I am not qualified to judge translations as translations: I have to rely on scholarly consensus for such understanding as I can possess of the original texts, so what I have to say will be from a literary viewpoint. But I believe my position to be a valid one and rejoice that so many others (strange bedfellows, some of them!) have recently voiced similar opinions. I propose simply to look at six successful modern versions of the whole Bible and analyze their characteristics in order to evaluate them as literature before trying to draw some conclusions from my findings. The six versions are the Revised Standard Version (RSV), the Jerusalem Bible (Jer.), the New English Bible (NEB), the Living Bible (LVB), the Good News Bible (GNB) and the New International Version (NIV). So much by way of introduction.

It seems best to begin with the story of origins in Genesis and to compare what the modern versions make of Gen. 3: 1-6, the account of the Fall. In Gen. 1 and 2 the scene is set: our first parents are installed in Eden with the beasts and birds and are employed in healthy and useful labour. Against this background we are introduced to the vital narrative of 'Mans First Disobedience'. The writer answers the reader's natural enquiry about the discrepancy between the original and the present condition of God's creation. Three details in the vocabulary of the Authorized Version (AV) in the first verse seem to have called for changes in the minds of some of the translators: 'serpent', 'subtil' and 'beast of the field'. Only GNB alters 'serpent' to 'snake', but its effect is merely to lose the mystery of 'serpent' in favour of the known species of snakes we can see at the zoo.

This particularization and its limitation of a word's penumbra of associations is a characteristic of modern versions. AV's 'subtil' is retained (as 'subtle') by RSV and Jer. NEB and NIV choose 'crafty' (LvB, 'craftiest'), and GNB 'cunning'. An immediate loss is the onomatopoeic alliteration with 'serpent'. More important, however, is the change in meaning: a repulsive snake can be 'crafty' or 'cunning', with their suggestion of shiftiness and underhand petty crime, but AV's 'serpent' is 'subtil'; the effect is to convey the impression of a formidable, stately, intelligent adversary and so to prepare us for the ease with which Eve capitulates. For 'beasts of the field' in AV, LvB has 'creatures', and RSV and NEB 'wild creature'; Jer prefers 'wild beasts', NIV 'wild animals' and GNB 'animal'. Assuming that 'beasts of the field' might be felt today to convey the idea of farm animals, what has been gained by the substitutions? GNB and LvB realize there is no need for the redundant 'wild' here. But 'animals' for us do not include reptiles like the serpent, while 'wild beasts' conjures up zoo cages, safaris and Roman circuses - certainly not the Garden of Eden.

The second half of Gen. 3: 1 begins in AV with its well-known formula, "And he said unto the woman" and is completed by the serious, "Yea, hath God said, 'Ye shall not eat of every tree of the garden?'" The modern versions delete the initial 'And' and convert 'unto' into 'to', while Jer and GNB change 'said' to 'asked'. With the direct speech of the serpent here - and, indeed, throughout the ensuing dialogue - the modern translations lose the majestic tone which is demanded by the crucial significance of the story for the human race. The mother of mankind, glorious, serene, innocent, is conversing with the serpent on terms, apparently, of near equality. The episode demands the appropriate high seriousness. But our post-war translations seem to prefer off-hand, unrhythmical, bald prose for their renderings. "Did God really say/tell", we find in NIV, Jer and GNB. LvB's penchant for simplistic colloquialisms produces, "'Really?' he asked. 'None of the fruit of the garden? God says you mustn't eat *any* of it?'" NEB strives for seriousness with "'Is it true that God has forbidden you to eat from any tree in the garden?'" Only RSV, predictably, retains the emphatic rhythm of "Yea, hath God said", but even so reduces it to "Did God say". Only RSV, NIV and LvB preserve the sibilants: 'say ... shall' (RSV), 'say ... must' (NIV, LvB).

Take the serpent's words here in conjunction with those at 3: 4,5. Jer renders his speech, "No! You will not die! God knows in fact that on the day you eat it your eyes will be opened and you will be like gods, knowing good and evil". NEB varies to, "Of course you will not die", while LvB has "That's a lie!" the serpent hissed. "You'll not die". GNB has, "The snake replied, 'That's not true; you will not die'", and is the sole

version to jettison 'evil' in favour of 'bad'. NIV tries to inject something of the savour of modern fiction by dividing the serpent's speech as LvB does: "You will not surely die," the serpent said to the woman. "For God knows ...", but why has it retained the AV's 'surely'? RSV knew better with its "You will not die". The modern versions seem to me to verge perilously close to the conception recently portrayed in a *Punch* cartoon, which depicted a very contemporary Adam and Eve as a couple of nudists strolling in an overgrown park who are suddenly confronted by a rather bored snake hanging from a branch and saying, "Hi there - I'm the Entertainments Director around here".<sup>6</sup> Compare them with the stately, striking simplicity of AV's, "And the serpent said unto the woman, Ye shall not surely die: for God doth know that in the day ye eat thereof, then your eyes shall be opened, and ye shall be as gods, knowing good and evil."

Modern versions tend to eliminate initial conjunctions, update individual words and shorten sentences. We see this last operation at work in Gen. 3: 6. The single sentence of AV and RSV becomes two in NEB and NIV, three in Jer and GNB, and four in LvB. I suspect this ratio might perhaps offer a valid statistical comparison between the versions. NEB starts well with "When the woman saw that the fruit of the tree was good to eat, and that it was pleasing to the eye", but adds "and tempting to contemplate", thereby introducing a latinate trisyllable into an otherwise superbly simple sentence. As an after-thought, almost, we are told, "She also gave her husband some and he ate it." NIV virtually reproduces that anticlimactic sentence after tripping up as well over "and also desirable for gaining wisdom". It is a pity that in addition to doing the same, Jer should fall into the trap of rendering "The woman saw that the tree was good to eat", by forgetting that if you alter 'good for food' to 'good to eat' you have to add 'the fruit of' as well! The third statement adduced to account for our first parent's credulity is rendered by Jer clumsily as "and that it was desirable for the knowledge that it could give". GNB transposes the idea of the tree's attractive quality to the beginning of the sentence and uses 'how' throughout the tripartite explanation, presumably to get inside Eve's mind and to counter the difficulty of the third clause; but by utilizing 'beautiful' and 'wonderful' this version succeeds only in debasing the level of the narrative. By transferring 'also' to "he also ate it" GNB perhaps avoids evacuating this essential clause of necessary emphasis as NIV, Jer and NEB do. LvB's idiosyncratic paraphrase succeeds here by preferring "and he ate it too". RSV's "and he ate" does the best that modern English can do to preserve AV's solemn and enormously emphatic "and he did eat". The balance of AV's progression to this climax remains unequalled: "And when the woman saw that the tree was good for food, and that it was pleasant to the eyes, and a tree to be desired to make one wise, she took of the fruit

thereof, and did eat, and gave also unto her husband with her, and he did eat." The mastery of this measured yet simple prose, its restraint and economy in the telling of the cosmic disaster, must be preferred to the account in the modern versions.

Comparisons of other biblical passages yields similar findings. Israel's flight from Egypt, for example, is translated by AV in a style entirely suited to the event's historical and theological significance. The antique English at once invests the narrative with the air of epic, while the prose rhythm reinforces the heightened tone, and slows down the pace with its deliberate repetitions and ritual phrases. It is ideal for reading aloud, compelling careful phrasing and preventing unseemly haste. By comparison, the modern versions for the most part are no better suited for public reading than the newspaper reports that some of them seem to want to imitate. All of them except RSV lose the choice ambiguity of AV's "the heart of Pharaoh ... was turned" (Ex. 14: 5) with their uniform "changed their minds", when surely we must allow for the possibility that God was once again 'hardening Pharaoh's heart'. AV's 'servants' is preferable to GNB's and NIV's bureaucratic 'officials'. NEB and Jer try to achieve an epic tone in this passage, but LvB, GNB and NIV typically lapse in their translation of direct speech. The inaccuracy of NEB's 'slipped away' needs no comment.

As a translation of documents of other cultures distant in time as well as geographically, the Bible contains exotic elements. The mere mention of place-names such as Pi-ha-hi'roth, Migdol and Baal-zephon in Ex. 14 imparts a sense of strangeness and mystery to the English reader. A much more exotic eastern atmosphere is conveyed in Esther 1, where it is interesting to see how the various modern versions treat the rich description of the pagan monarch's lavish splendour. Their concern for accuracy presumably lies behind renderings which speak of "a mosaic pavement of porphyry, marble, mother-of-pearl and precious stones" (RSV, Jer; NIV 'other costly stones'), or "malachite and alabaster, of mother-of-pearl and turquoise" (NEB), or "a courtyard paved with white marble, red feldspar, shining mother-of-pearl and blue turquoise" (GNB). AV's "pavement of red, and blue, and white, and black marble" does not expect the reader to be a geologist or a specialist in fine arts in order to understand the author's description. The modern versions here remind me of that kind of 'realism' favoured by the late Ian Fleming, where everything is precisely categorized and price-tagged. Or, to suggest another analogy, the technique seems to be that of the Victorian painters Leighton, Alma-Tadema and Poynter, with their pedantic devotion to supposed historical detail. Just so the gorgeously rich colours of AV here, conveyed by its characteristically measured rhythmic prose, are transmuted in the modern versions into details of value. Perhaps this is a comment on our culture. Another significant weakness displayed in contemporary renderings of this chapter is an inability to

express Vashti's beauty with suitable dignity. NIV, in its effort to avoid cliché, falls into a worse trap by translating "she was lovely to look at", which, by its immediate reminiscence of the popular song, effectively deflates the literary tone of the account. Once again it is left to RSV to retain AV's simple but dignified "she was fair to look on" with "she was fair to behold".

The Psalms provide the obvious place for a comparison of the modern versions' translation of biblical poetry. It seems to me an extraordinarily significant point that most of them choose to render the old blessed by 'happy'. The history of English 'bless' and 'blessed', 'blessing' and 'blessedness', is rich indeed, and the words convey a whole complex of meaning. 'Happy' signifies a clutch of ideas mainly connected with circumstances, luck or fortune. To reduce 'blessed' to 'happy' in contexts closely associated with God Himself is to forfeit most of the true significance of the concept. 'Happiness' is a transient, fragile feeling, a mere matter of passing emotional wellbeing. 'Blessedness' is, for the Bible, a state conferred by God which brings one into a peculiarly special relationship with Him. I am glad to discover that others share my distress at this crucial change in the modern versions.<sup>1b</sup> Having said this, I propose to compare Ps. 1: 1a and 4a. NIV pushes RSV's modernization process further by regularizing the earlier version's retained inversion. Not one of the others keeps the image of walking, while GNB destroys the imagery altogether by its flat positive abstract statement "reject the advice". Because they cannot leave 'the wicked' without adding 'men', unlike the more literary versions, LvB and GNB have to make the subject plural to avoid repetition. Jer intensifies the simple negative into 'never'. In the other half-verse, the influence of the other modern versions seems to have forced NIV into inversion, omission of the verb, and the addition of an exclamation mark, so often the sign of inadequate verbal emphasis. NEB adds 'men' to 'wicked', which it did not do so in 1a, and by changing 'so' to 'like this' weakens the force of the assertion, as does the simple but garrulous rendering of GNB. LvB, granted its paraphrastic nature, is in keeping with its general style, unlike Jer's repetitive and semi-hysterical wording.

Comparative analysis of many of the Psalms would reveal confirmation of these characteristics of the modern versions' handling of biblical poetry. What emerges most strikingly is GNB's consistent levelling down of varied literary forms and styles to a grey uniform featurelessness by its use of an identical 'common English' style throughout the entire Bible. A good example is found in Ps. 124: 6, where the image of the predatory wild beasts is lost, together with the beautiful "Blessed be the Lord" of AV, RSV, Jer, NEB and LvB ('Praise be to the LORD', NIV), by GNB's "Let us thank the LORD, who has not let our enemies destroy us." All the impact of "a prey to their teeth" (AV, RSV,

NEB) or "torn by their teeth" (NIV) or "a victim to those teeth" (Jer) or even 'devour' (LvB) is thrown aside. It is the same in the Song of Solomon, where the poetic delicacy of "I am sick of love" and "his right hand doth embrace me" of AV is followed by the other versions with appropriate modernizations, but is translated by GNB with the explicit, prosaic statements "I am weak from passion" and "his right hand caresses me" (2: 5,6). It manages to subject even Job to its 'common English' process, rendering "Man that is born of a woman is of few days, and full of trouble" (14: 1, AV) by "We are all born weak and helpless. All lead the same short, troubled life." Similarly the image of "giving up the ghost" (14: 10) is translated into an imageless journalistic two-part sentence in order to retain the rhetorical question: "But a man dies, and that is the end of him; he dies, and where is he then?" For GNB, the ideal of dynamic equivalence appears to involve the destruction of the poetic: the famous description of the virtuous woman in Prov. 31: 10-31 becomes a piece of newspaper prose.

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So far we have looked only at the Old Testament, a procedure justified by the length and literary richness of that section of the Bible. But it is the New Testament which receives more attention and to this I must now turn. First, let us glance at its narrative, still an important mode in the NT's reporting of the essential facts of an historically-based religious faith, with the account of Christ's encounter with Legion in Mk. 5: 1-9. Ambiguous pronouns are avoided, the vocabulary is modernized, and the long sentences of the Greek are broken into shorter units by most of the modern versions, although RSV retains AV's structure for the most part. Jer actually enlarges its initial sentence and LvB displays a pleasing variety in sentence-length. GNB allows itself to add explanations: 'they' becomes "Jesus and his disciples", "the sea" is expanded to "Lake Galilee", 'tombs' is clarified into "burial caves there"; its 'common English' also permits colloquial redundancy: "the man had an evil spirit in him", "chained up". The modern versions have damaged or destroyed the familiar rhythmic sonority of AV's sense units, which are so splendidly adapted to public reading. "Neither could any man tame him" is rendered "no one had the strength to subdue/control him" (RSV, Jer), "no one was strong enough to subdue/master/control him" (NIV, NEB, LvB), and "He was too strong for any one to control him" (GNB). Despite their agreement about the contemporary English idiom, their efforts smack of journalese, while their wording denies itself the exactly apposite associations of AV's verb 'tame'. The final outrage is GNB's substitution of 'Mob' for 'Legion' as the poor man's name.

The parable of the rich man without sufficient storage space for his bumper crops is a good example of both parable and satire. What do the modern versions make of Lk. 12: 13-21? AV's translation is again updated and expanded by interpretive, explanatory additions which seem to me, in fact, to restrict the meanings contained in RSV's and NIV's simple modernization of AV. GNB's 'person' here, together with instances of its preference for the plural, possibly suggest some accommodation to 'anti-sexism'. RSV and Jer retain AV's 'soul', but the others choose 'myself', with some variation in the form of self-address: 'You' (NIV), 'Man' (NEB, as though the rich man were an American negro or trendy youngster), 'Lucky man:' (GNB) and 'Friend' (LvB). RSV, Jer and NEB translate the man's internal monologue at the literary level, but NIV, GNB and LvB fall into colloquial contracted forms. His confident imperative of "Take thine ease, eat, drink, and be merry" in AV is rendered variously as "Take life easy" (NIV), "Take things easy, eat, drink, have a good time" (Jer), "Take life easy, eat, drink, and enjoy yourself" (NEB, GNB), and "Now take it easy - wine, women and song for you!" (LvB). The familiar solemn conclusion and brief application cause difficulty to modern translators. 'Soul', with its implicit assumptions of immortality and accountability, cannot be fully replaced by 'life', which loses much of the threatening content of the divine warning. NIV forfeits the solemn urgency of RSV's adaptation of AV, Jer at one point verges on officialese, while NEB's suitably restrained tone finally lapses into the colloquial. LvB's incisive "Fool! Tonight you die. Then who will get it all?" is effectively economical, however, and is capped by the pungent "Yes, every man is a fool who gets rich on earth but not in heaven". GNB ends, "And Jesus concluded, 'This is how it is with those who pile up riches for themselves but are not rich in God's sight'", thereby both adding an unnecessary introductory comment and committing the repetition which every other modern version adroitly avoids.

Our Lord's teaching was couched in vivid, memorable words to aid its oral transmission and preservation until it came to be permanently recorded. To see how the modern versions translate oratory, then, I have chosen a few verses from the Sermon on the Mount, Mt. 5: 13-20. Immediately we are struck by LvB's interpretive expansion of "You are the world's seasoning, to make it tolerable" and by GNB's decision to transform the metaphor into a simile, "You are like salt for all mankind". Similarly, GNB alters the rhetorical question, "how shall its saltiness be restored?" (RSV) into a statement and incorporates a now familiar Americanism, "there is no way to make it salty again". "You are the light of the world" (RSV, NIV, Jer) receives the same treatment from GNB - "You are like light for the whole world". All the versions except RSV find it necessary to emphasize our Lord's application of His illustration, "Let your light so shine..." (AV). All the versions except GNB and LvB assume understanding of "the law and the prophets". Jesus's emphatic "For verily I

say unto you" (AV) becomes a more or less unsuitable form of words in every modern version, from GNB's "Remember that" to NIV's "I tell you the truth", with its suggestion that occasionally our Lord did otherwise. All the versions show sufficient sensitivity to euphony in their renderings of AV's "scribes and Pharisees", if necessary by resorting to inversion, but GNB retains the AV order while expanding 'scribes' to produce "the teachers of the Law and the Pharisees". The hard saying of our righteousness having to exceed that of the scribes and Pharisees is paraphrased by Jer, NEB, GNB and LvB into modern English which lacks any forceful impact.

For my final example of close comparative analysis of our six modern versions I want to glance at the epistolary mode of 1 Thess. 5: 12-22. AV's series of brief injunctions is assumed by all the versions to be sufficiently unusual to warrant alteration, so we find a rare instance of AV's sentences being lengthened. AV's "know them which labour among you" produces six different translations: all perform the expected modernization to "those who", but AV's 'know' is variously rendered as 'respect' (RSV, NIV), "be considerate to" (Jer), 'acknowledge' (NEB), "pay proper respect to" (GNB), and 'honour' (LvB). These seem to give an unbalanced emphasis to the apostolic command, for AV's 'know' surely conveys both recognition and respect. NEB, Jer and GNB weaken 'admonish', and every modern version reduces the force of 'unruly'. AV's simple image, "ever follow that which is good" is replaced by another, "aiming at", in both NEB and GNB; presumably the latter did not recognize the tired cliché as an image at all. Both NIV and Jer fail to discover happy substitutes: "try to be kind" (NIV), "you must all think of what is best" (Jer). Only NEB rejects the vivid language of spiritual reality by translating AV's "Quench not the Spirit" as "Do not stifle inspiration" in its course of amalgamating AV's final four staccato imperatives into one smoother but infinitely less emphatic sentence. Only RSV and Jer do not restructure the passage.

I come now to try to summarize briefly the characteristics of the modern versions we have looked at.

RSV remains close to AV and the Revised Version (RV), being a revision of the American Standard Version (ASV) of 1901. Its committee criticized both RV and ASV for their 'formal correspondence' technique, but nevertheless kept in view AV's aim of revising the existing tradition of English Bibles. So the language was carefully modernized, the Semitic idiom "And it came to pass" disappeared, the text was divided into sense paragraphs, poetry was printed as such, although not consistently, and LORD or GOD was preferred to ASV's Jehovah. Literary criteria were recognized as important in the committee's admission that RV and ASV "are more accurate than the [AV], but have lost some of its



beauty and power as English literature".<sup>7</sup> RSV makes easy the transition from AV to a modern version because it remains firmly in the same tradition, often retaining identical wording and syntactic structure, and appears to prefer modernizations which try to keep the basic prose rhythm of the parent version. Because of its adherence to AV, it is now felt by some that RSV itself is old-fashioned, despite its post-war date of publication and subsequent slight revision.

The Roman Catholic Jer has attracted its share of attacks from literary critics opposed to the liturgical revolution in the churches,<sup>8</sup> but has received a better press from biblical scholars - a not unfamiliar occurrence! It is freer than RSV, opts for Protestant-sounding biblical names, prints a good deal of the text as poetry, and - its most obvious distinguishing feature - uses Yahweh for the divine name in the OT. While some of its renderings in the OT seem particularly happy, its NT has been criticized for excessive and progressively increasing freedom, sometimes at the expense of changes to the meaning.<sup>7b</sup> Kubo and Specht claim to have demonstrated "the inaccuracy of a translation that is meant for serious study of the Word".<sup>7c</sup>

NEB, once again, has been welcomed by biblical scholars, at least for its NT, but attacked by literary critics. T.S. Eliot described it as "an active agent of decadence"<sup>9a</sup>, and the present furor over liturgical change and the use of modern versions for the public reading of Scripture has singled out NEB as the object of considerable hostility. On the other hand, the theologically conservative Kubo and Specht accept it, with certain provisos, as suitable for public worship along with RSV and NIV.<sup>7d</sup> NEB departs from the AV tradition with a completely new translation, being governed by a freer principle, and is not committed to a literal word-for-word technique; it works from an eclectic text constructed by the translators. Its renderings oscillate from the colloquial to the pedantic, while its thought-by-thought principle allows it sometimes to incorporate interpretation into its text. It has been criticized as not only liberal but also ritualistic in its tendencies.<sup>10</sup> As literature, NEB suffers from weaknesses similar to those displayed by Jer - an insensitivity to the sound and meaning of English.

There is little to be said about LvB. Although it is suitable for introducing children to Bible-reading and helpful for private devotional reading, it is totally insupportable for public use. It flaunts all the faults to be expected from a free one-man paraphrase into colloquial American English. LvB is a product of contemporary American culture - the world of powerful advertising, strip cartoons, comic papers, popular TV, muzak - the whole monosyllabic, cliché-ridden vulgar mixture. It speaks to this generation, and God bless its use. But it simply is not literature, and it cannot compare, for example, with the revised Phillips.

GNB has been heralded as *the* Bible for today, immediately intelligible to anybody able to read English. In addition to its ready accessibility, it has been recommended also for its accuracy in translation, especially as compared with NEB.<sup>11</sup> Like NEB, it follows the principle of dynamic equivalence, and aims to convey the message of the Bible to modern readers, both Christians and unbelievers. It goes further in trying to bridge the cultural gap by using what it considers to be modern equivalents for biblical ranks, time, distance, capacity and money, and by avoiding technical religious terminology. Long sentences are divided into shorter units. Imagery is frequently translated into abstract statement. Rhetorical devices are shunned. Topical captions are printed at the head of paragraphs. But by aiming at the lowest common denominator, GNB uses a 'common English' which, although not so free and idiomatic as LVB's, is the product of the same culture. The quality of its language can be gauged from its illustrations. They are charming and frequently apposite - but they reflect the translators' expectation of their readership and possess a clear affinity with the world of picture books designed to encourage reading. These spare line drawings reinforce the impression given by the GNB (equally with LVB) that the sacred text has been reduced to a level at which it has to compete on equal terms with popular paperbacks and comics. This effect is particularly strong in the conversations recorded in Scripture, where the desire to be idiomatic, to copy contemporary speech patterns, has manoeuvred the translators into the frequent employment of unseemly and inappropriate language utterly at odds with the overall tone of the narrative. This endemic literary failure is related to a grave methodological weakness. If dynamic equivalence is to evoke from the modern reader the response aroused in the readers or listeners to the original text, then it must distinguish between its literary forms and styles. GNB does not: stylistic differences in the original are obscured by the abandonment of the literary for the colloquial. As Professor Bruce comments wryly, "Where the goal of 'common English' is incompatible with the ideal of dynamic equivalence, the former has prevailed".<sup>9b</sup>

I come to NIV of 1978. It is obviously much more literary and designed for public reading. The signs are that it may have chosen the right time to appear, for secular cultural pressure and the translation's evangelical auspices together seem likely to persuade Bible readers who have never yet favoured a modern version to take to NIV. Our examples will have made it clear that NIV has returned to the AV, RSV tradition, and has tried to capitalize on its literary strength. Its Preface declares that the translators "sought to preserve some measure of continuity with the long tradition of translating the Scriptures into English", and the publishers make large literary claims on its behalf. By and large, NIV's narratives retain something of the majesty of AV's,

with some updating of vocabulary and syntax, while availing themselves of greater freedom than RSV's. It is the poetry of NIV, however, which seems to me its strongest point. There are even places where it improves on AV. The Psalms are presented in a dignified, restrained translation, unlike some of them in Jer, NEB and GNB. It is particularly pleasing to find 'blessed' retained in preference to most modern versions' 'happy'. NIV seems also to understand the function of the NT letters as passionate written utterances designed to convince when read aloud to the church. It proceeds further along the road of sentence-shortening and regularization of word order than RSV, and so to that extent proves a flatter, more pedestrian version than the AV tradition. It is weak on rhythm, moreover, and, with other modern versions, fails signally to render direct speech in a fitting fashion. With GNB and LvB, NIV is fond of abbreviating 'is', 'am' and 'not' to the colloquial 's', 'm' and 'n't' while the same modernistic reduction occurs in its future tense auxiliary 'will' (to 'll'), which seems, on the American model, to be consistently preferred to 'shall'. NIV also shares with GNB an overworking of 'get'. Occasionally NIV is guilty of a lapse of taste in descriptive passages. These failures may be summarized as NIV's inability to maintain a consistent tone. The fact that the committee found it impossible to achieve the unflinching dignity which it set out to attain appears to confirm the conclusion which it seems one is compelled to draw from modern versions as a whole, that the English language today is culturally incapable of supporting a sacred text.

It has been argued that modern versions display not so much the decline of our language as the state of our theology. The difficulty which contemporary people experience in believing the Bible stories is certainly related to the rise of a common speech which rejects subtlety and ambiguity. Cultural change has therefore disabled English from expressing thought forms which are felt to be primitive. As Stephen Prickett says, "It is simply not possible, in the words of the GNB's Preface, 'to use language that is natural, clear, simple, and unambiguous', because religion is *not about* things that are natural, clear, simple, and unambiguous".<sup>12a</sup> So he suggests that "the most important feature of the language of the AV for us is not that it is more archaic or obscure than the modern versions, but simply that it is much more subtle *theologically*".<sup>12b</sup> In similar vein, Geoffrey Strickland claims of modern translators that "Their way of retelling the Bible story makes it obvious that they don't believe it".<sup>13a</sup> He ought to have qualified this sweeping generalization by noting the situation of the translators in a post-Christian, unbelieving society whose language is the medium they have to employ, but he puts his finger on the essential importance of the *style* of biblical translation when he writes, "It is that ring of authenticity whose audibility or absence makes all the difference in the world to what one is saying and this is why the question of

belief turns inevitably not only on what one says but the way one says it."<sup>13b</sup> Certainly in the public reading of the Bible it is the fitting style which possesses the power to please, teach and move the listener: impact and conviction spring from the literary quality of the version used.

Obviously we must distinguish between Bible translations used for private study or devotion and those used for public worship. We might find ourselves looking at RV for study (as Professor H.F.D. Sparks strongly recommends<sup>14</sup>), reading Phillips or NEB in our private devotions, and listening to RSV in church and following the passage in our own copy. Our children might be started on LvB, while we may give a GNB to an interested neighbour. The many available versions of the English Bible promote purposes of evangelism, communication and edification.

There are, however, inherent in this seemingly ideal situation certain very real disadvantages, which I have set out elsewhere.<sup>15</sup> The ready availability of a variety of modern versions has introduced confusion, discouraged the following of public reading, undermined committal of Scripture to memory and spread doubt where none existed when there was in the AV a universally recognized standard text. If we believe in inspiration, it is never sufficient to read a translation: we have to get as near as we can to the original text, even if it is only through an interlinear Greek NT and commentaries. The existence of so many alternative translations in itself, that is to say, is not such a great boon: we could derive the same benefit from fewer versions. Those versions would need to be more literal and more literary, for the more idiomatic translations, I firmly believe, make for the trivialization of Scripture. This charge derives, of course, from the importance of style. Evangelicals have always been open to criticism for not reading much outside their own narrow area of publications. If they read only those versions of the Bible that are couched in idiomatic and colloquial 'common English' - GNB, LvB, of those we have considered - or even only those translations which try but fail consistently to achieve a more literary level - NEB, Jer, NIV - then they will have lost touch with the great tradition of AV and will be effectively incapacitated from reading good secular literature. The educative potential of the AV tradition will have been forfeited. What these colloquial versions do is to deprive the Word of God of an appropriate medium for its essentially serious message. Issues of life and death - which is what we believe the Bible to be about, surely - must be expressed in suitable English, fitting to their claims. Content cannot be separated from style; as Strickland pointed out, *what* you say is determined by *how* you say it. Committee English from the board room and the corridors of power cannot sustain the weight of Scriptural communication; it is simply inappropriate, and therefore fails to carry conviction. Finally, this process of trivialization debases our appreciation

of Scripture itself. A narrative style that teeters on the brink of anticlimax, a method of rendering dialogue or direct speech which equates it with today's common colloquial English, a deliberately antirhetorical translation in passages where literary devices are demanded for the effective transference of the full message of the original - these features not only fail to enhance our understanding of what it was the original writers were trying to communicate, they positively debase its literary level and therefore reduce our appreciation of its intrinsic importance. The flat, unmusical tones of Clement Attlee could not have stirred a nation as did the deliberately rhetorical, emotional, carefully orchestrated speeches of Winston Churchill. The unrhetical is neither moving nor memorable. That is why AV can be memorized; that is why AV still conveys the Bible message with a palpable authority and conviction; that is why AV, in my view, cannot and should not be replaced by a modern version in the public reading of Scripture during the worship of the church. If it were ever to be totally superseded, we should have lost not only one of the two priceless jewels of English literary culture, but also the only adequate translation of the Bible into English which is immediately sensed to be of the appropriate kind.

"In the Bible", remarks Calvin D. Linton, "the reader gets at least a glimpse of the beauty of God".<sup>16a</sup> I am not, however, pleading for the retention of AV as some beautiful monument or the best available frame for some ancient portrait. The astonishing complexity of *King Lear* can't be grasped by summarizing its 'thought'; a precis or paraphrase of *Emma* or *Middlemarch* or *Nostramo* or *The Rainbow* is no longer the work of art itself; and the 'message' of the Bible is not abstractable from the words in which it is formulated, as the history of doctrinal controversy bears witness. Our English Bible is, of course, a translation from ancient Hebrew and Greek documents; and what either the Aucas Indians or a multi-racial inner-city church in contemporary Britain require from their versions of the Bible is not in the first instance great literature. For most major constituencies of potential Bible-readers there exists a suitable version.

But I believe that by confining their scope to modern versions only, readers of the English Bible of whatever background are depriving themselves not only of their cultural birthright, but also of a richer rendering of the sacred text which is there for them in the AV. As Professor Partridge concluded from his examination of the NEB, "It is evident that some of the cherished religious themes are not adaptable to the tones and rhythms of contemporary speech."<sup>4</sup> Recent research has suggested that the General Meeting of the AV translators carefully reviewed the work of the various translation companies and that its revisions "functioned primarily to improve style".<sup>17</sup> The result, in George Steiner's words, is that "in the history of the art [of translation] very probably the most successful domestication is

the King James Bible": readers "find a native presence in what is ... a remote, entirely alien world of expression and reference." He insists that "this 'ingestion' and transmutation of Hebrew, Greek and Latin sources into English sensibility ... would not have occurred had the scholars and editors of 1604-11 laboured to be 'modern'."<sup>18</sup> The holy demands appropriate utterance. By all means let us make use of idiomatic modern versions. But let us not use them exclusively, and but rarely or never in congregational worship, when we need all the assistance afforded by the most sublime language Englishmen have been capable of writing if we are truly to raise our minds to God and to present our united praise before Him. With Professor Brian Morris, I believe that "the greatest truths can only be mediated in the greatest language."<sup>19</sup>

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'VALUE-FREE KNOWLEDGE' - MYTH OR NORM?

It is now fashionable, even in some Christian circles, to imagine that the aim of science is no longer to seek objective knowledge. All scientific knowledge is held to be 'value-laden', and the concept of value-free knowledge a 'myth'. Professor MacKay traces the fashion to the influence of social scientists who, as people, study other people, and so have special difficulty in avoiding value-bias in their work. Belief in God as Creator, he argues, validates the concept of objective knowledge of the creation.

The modern scientific enterprise grew up in an atmosphere not merely favourable to biblical religion but in large measure generated by it<sup>1</sup>. God had written the Book of Nature; it was man's part to read it - humbly, observantly and obediently - and to do his best to apprehend it correctly. Although the founders of modern science were under no illusions as to the limitations, both instrumental and conceptual, that would hinder them in this task, their goal, however imperfectly achievable, was definite and objective. If the enterprise was conducted under the eye of the Author, then for Him at least there could be no doubts about the correctness or otherwise of any resulting claims to knowledge on man's part. The honest scientist schooled himself to distinguish between the way things *are* and the way he would have *liked* them to be: he sought to guard against the danger of letting his values and preferences distort his reading of the facts. Though realising that his aim was imperfectly achievable, he would have counted it a shame in the sight of God to be found negligent in seeking to achieve it.

It is symptomatic of the practical atheism of our day that this early emphasis on the ideal of objective, value-free knowledge - on the existence of facts that must be reckoned with



whether we like them or not — has found itself increasingly under attack. Once the Author has been removed from the scene, who is to say whether the Book of Nature is being accurately read? If nobody can say — why not dismiss the concept of value-free knowledge altogether, as an exploded myth? Perhaps through a misconception of the work of Thomas Kuhn<sup>2</sup>, it has recently been fashionable to assert that even in natural science there are no significant matters of 'straight scientific fact', and to write off those who disagree as naive.

From a certain type of unbeliever, this dismissal of objectivity as an ideal is at least consistent. What is more startling — and more disturbing — is to find something very like it echoed increasingly nowadays by people who profess Christian beliefs, especially those in the social sciences<sup>3</sup>. The fact that a whole conference of Christian university staff was recently convened to discuss "The Myth of Value-Free Knowledge" makes me wonder whether even some evangelical believers have been seduced into giving it credence. In case any readers of *Faith & Thought* are among them, let me try to sow some seeds of legitimate doubt in their minds. I want to argue that Christians should strongly oppose the fashionable rejection of the ideal of value-free knowledge, because except in a few special cases (see below), that rejection is both illogical and inherently incompatible with the theistic Christian position.

That total rejection of the ideal of value-free knowledge is illogical (i.e. does not follow from its premises) hardly needs demonstration. The alleged grounds for it are that the values of the scientist (and of his social background) inescapably bias his selection of data and colour his reading of those he selects. Thus even if he takes value-free objectivity as his aim (so the argument runs), his performance must fall so far short as to make the whole concept meaningless.

To be sure, any idea that the *practice* of science can be value-neutral is nonsensical: our decisions whether, when and at what cost to lift the lid of Pandora's box or to publish what we see when we peer inside are as value-laden as human judgments can be. But for the working scientist in, say, chemistry, physics or engineering, the plea that he should on these grounds abandon his ideal of value-free knowledge as a 'myth' is a monstrous *non sequitur*.

A scientist's values, as well as the prevalent thought-forms of his society, doubtless shape the *questions* he asks: and he knows how tentative and imperfect are his *formulations* of the knowledge he gains, as he seeks to answer these questions<sup>4</sup>. But by no stretch of logical canons can this justify the conclusion that the concept of value-free knowledge is a myth. After all, the scientist has daily experience of any number of aims that are

imperfectly achievable (e.g. the maintenance of mechanical or thermodynamic equilibrium, or the establishment of the structure of a gene) without being robbed *ipso facto* of their definite and objective meaning. What is more to the point, he faces the growing mound of evidence that in pursuing science, he and his colleagues are accumulating knowledge than can be *relied upon* within stated margins of imprecision. He is convinced that such knowledge refines itself by repeated test, and stands to be reckoned with by anyone (whatever his values or ideology) who ventures into the relevant territory. For him to pretend otherwise would be irresponsible tomfoolery<sup>5</sup>.

Why then has such a counterintuitive thesis gained so much currency? The main reason, I think, becomes clear from the concerns of those who propagate it. Almost all the pressure to decay the ideal of value-free knowledge comes from students of human nature and human society. They, too, would like to be called 'scientists'; but in their particular line of investigation there are (at least) three epistemological snags which have no parallel in the classical sciences. (a) They are people investigating *people*. Their own interests and values and presuppositions — their own idea of what it is like or ought to be like to be a person or a society — inescapably colour not only what strikes them as worthy of investigation in the human situation facing them, but also what they perceive in it. Framing a questionnaire, for example, is seldom if ever a neutral activity. (b) Asking questions is not a neutral activity either: it puts ideas into people's heads, or reshapes the ideas already there, so that 'value-free questioning' is virtually impossible. (c) Above all, the promulgation of findings (especially descriptions of current attitudes and trends) among the people investigated will in general *affect their accuracy*: it can be either self-fulfilling or self-stultifying<sup>6</sup>.

In general, offering people a picture of themselves, especially if it purports to be a prediction of their actions, is not so much informative as *manipulative*<sup>7</sup>. Like the cry of the back-seat passenger to the driver: "You'll be in the ditch in a minute", such communications function more like *advice*: "Consider how you would like it if things turned out this way". Neither the questions and statements of the social scientist, nor his decisions as to whether or when or to whom to present them, could pretend in general to be 'value-free'.

In face of such embarrassing considerations for a discipline claiming the name of a 'science', it is understandable that some social scientists have passed from the admission that *they* cannot offer value-free knowledge, to the suggestion that no other discipline can do so; and from that to the aggressive dismissal of the whole idea of value-free knowledge as a 'myth'. But this will not do. What follows logically from the predicament of the social scientist is not that value-free knowledge in general is a

myth, but only that certain ways of investigating *human beings* do not easily (if at all) yield value-free knowledge (though they may yield power); and that certain statements made to human beings about themselves, and especially about their future, *do not impart knowledge*, except in a conditional form which they themselves can (and often must) play a part in making true or false. Limiting though this may be for those of us whose calling is to study people, whether as objects or as subjects, it gives no reason whatever for throwing doubts on the validity of the concept of value-free knowledge in general. To do so merely invites the reaction we feel towards Aesop's fox who lost his tail! The clean and honest way to cope with the situation is surely to use a distinguishing term (other than 'knowledge') for what people say to one another about each other (on whatever basis) that is *not* value-free. (An engineer would call it 'Feedback'.) Warning? Exhortation? Image-Building? Brain-washing? Encouragement? Discouragement? Inflammation? It could be any or all of these and more. Perhaps the most general term would be 'Assessment' or 'Appreciation'<sup>8</sup>. To receive such communications about ourselves may in a sense be informative; but it does not confront us with the 'take-it-or-leave-it' claim to our assent which is the hallmark of objective knowledge.

Admittedly if this distinction were recognised it might raise some further interesting questions. On what basis ought people to be selected and licensed to exercise such manipulative functions under the guise of imparters of 'knowledge'? By what criteria ought *they* to be valued for doing so? Under what conditions, for example, and by whom, should they expect to be *paid* for purveying their own particular values in this capacity? But I digress ....

Someone may be inclined to object that if all our methods of trying to acquire or impart knowledge of human beings are value-biased, this does seem to make the notion of value-free knowledge empty at least in the social sciences. I am aware (as an outsider) that this is a matter of hot dispute among contemporary sociologists. Weber's early ideal of objectivity in social science finds few defenders among today's *avant-garde*. Mannheim's hope that an academic 'intelligentsia' could serve as impartial bridge-builders between the sociological 'outsider's view' and the intrinsic 'participants' view has not been realised. As seen by Alvin Gouldner, for example, "the fate of objectivity in sociology is linked with, and its fortunes vary with, the changing hopes for a peace-bringing human unity". Early-nineteenth century Positivism, he argues, "set itself the task of creating both an objective social science and a new religion of humanity, each informing the other and aimed at re-uniting society". In Gouldner's view "the conception of objectivity has commonly projected an image of the scientist as linked to a higher realm, as possessed of a godlike penetration into things, as serenely above human frailties and distorting passions, or as possessed of a priest-like impartiality"<sup>9</sup>.

I need hardly say that this humanistic image of the scientist is the reverse of that which should inspire the Christian social scientist to retain the concept of value-free knowledge. In biblical perspective the scientist is not a god but a humble steward, answerable to the Giver of his data for the accuracy with which he reads them. He is thankful that, despite his human frailties and distorting passions, it has proved possible to establish a vast and ever-growing structure of solid facts about people — in medicine, physiology, psychology, and even such subjects as economics and social dynamics — which people themselves must accept and reckon with whether they like them or not. But the central point for the Christian, which makes nonsense of the anti-objectivist case, is that where *he* may find it difficult or impossible to arrive at a value-free description of a human situation, he is under the judgment of One who *knows* the way things are, for it is He who created them and now holds them in being, just as they are. Thus whatever the human scientist may think about Joe Bloggs, he is in the unseen presence of One who *knows* whether he is correct or not to think as he does about Joe. If he enters into dialogue with Joe, and so becomes one system with him, he will doubtless forfeit thereby the possibility of gaining the predictive knowledge of Joe that a non-participant may have<sup>7</sup>. But whatever the limitations and relativities of his own view, still behind all, and Giver of being to all, there is God, who knows just what it is that the scientist-in-dialogue would be correct to believe about Joe<sup>10</sup>. It should be added that there may be vastly important generalisations to learn and understand about a society as a system, which individual members of any society could be correct to accept as objective fact without invalidating them. I am thus far from agreeing with the notion that it is impossible to study society scientifically. On the contrary, once the present defeatist fashion has passed, I look forward to the growth of a science of society in all its facets, which will be increasingly rewarding in the accumulation of solid knowledge.

If the Creator's knowledge constitutes a conceptual criterion of objectivity even in the special case of human science, it does so *a fortiori* in the general domain of scientific investigation. No doubt personal limitations and prejudices and cultural thought-forms can even, in theory, bias and distort our scientific descriptions of physical reality. There is no guarantee, even in physics, that what we *claim* to know about our world is ever totally value-free. The folly of taking refuge from objectivity in such theoretical admissions, however, is shown by the solid day-by-day reliability of physical science as a guide to our expectations; and even where they have practical import, the inference is not that *knowledge* is never value-free, but only that what we *claim* to know is liable to be a blend of truth and error, knowledge and prejudice or wishful thinking. And again the Creator is the all-knowing arbiter of the extent to which what we claim to know really *is* knowledge.

Why is this so important? Because at its root, as I see it, is the age-old question: Who is to be master? The ideal of value-free knowledge is the representation of what the Creator has provided for me to reckon with, as it is, whether I like it or not. There are admittedly some aspects of the future which it is up to me to determine, and about which there exists no value-free knowledge-for-me<sup>11</sup>. (There cannot be take-it-or-leave-it knowledge-for-you of a situation which logically depends on whether you 'take it' or 'leave it'!) But for the rest, my highest ambition must be to know and to do full justice to the objective facts as God knows them, and so render to Him as their Giver my whole-hearted obedience.

### *Summary and Conclusion*

The main argument of this paper has been that whatever our admitted epistemic difficulties is disentangling fact from interpretation and evaluation, especially in the human sciences, nobody who takes seriously the concept of God as the all-knowing Creator can rationally dismiss the concept of value-free knowledge as a myth. Such a Creator is the ever-present arbiter of the distinctions between factual knowledge (that which stands to be reckoned with, whatever one's values) and the whole spectrum of value-loaded beliefs, opinions and assessments that we form (and properly form) as participants in the flux of human history. Where what passes for the "communication of knowledge" is admittedly value-laden, it would seem better to identify it as such by a distinguishing label (such as 'assessment' or 'appreciation') than to rob the term 'knowledge' of its objective connotation.

In these terms we have noted that the concept of 'knowledge about our future' is an important special case. There must in general be some objective facts-for-non-participants about our future (whether or not anyone knows them) which are not objective facts-for-us, because it is our thinking and choosing that will determine what form they will take. In that sense what we think about our own future is (for us) inescapably 'value-bound'. It is ramifications of this logical dilemma that make it impossible completely to divorce facts from values in social sciences, though without in any way eliminating the need in general for the concept of value-free knowledge.

Finally, it is important to distinguish the Christian motive for retaining the concept of objective knowledge from the motive of unbelieving humanism. Christians who believe that objectivity is a duty to the Creator, before whom the scientist is under judgment, have no need of the scientificistic *hubris* of Positivism to back up their emphasis; nor would it make sense for them to abandon objectivity for fear of being tarred with the same brush. Instead, I suggest that the current debate offers a splendid opportunity for the academic Christian to show what it means for him professionally

to believe that "all things are naked and opened to the eyes of Him with whom we have to do": that for us value-free knowledge is no myth, but a norm which, like righteousness in the domain of the spirit, is no less meaningful and normative for being imperfectly attainable<sup>12</sup>.

## NOTES

- 1 See Charles Webster, *The Great Instauration*, 1975; also R. Hooykaas, *Religion and the Rise of Modern Science*, 1972. By the time that the social sciences reached self-consciousness, of course, the religious climate had changed; but the same theological principle is equally applicable to them.
- 2 Thomas Kuhn, *The Structure of Scientific Revolutions*, Chicago, 1961.
- 3 See for example the review of my book "Human Science and Human Dignity" by N. Isbister with D. Lyon in this JOURNAL, 1979, 106, 178-183. In this connection (*idem*, p. 180) note that observationally established disparities between objective accounts at the same level of explanation would create a problem only if each account were defined from the same stand-point. Otherwise (as with the left- and right-eye views of a 3-dimensional scene) they are simply complementary; and the disparities actually provide objective information about the dimensionality of the structure being observed. See D.M. MacKay, "What makes a contradiction?", this JOURNAL, 1968 97, 7-14.
- 4 Our present theoretical picture of the structure of matter, for example, embodies concepts such as "the electron" with a status much open to dispute, however reliable the predictions we have learned to base upon it.
- 5 Christians in particular must be careful not to exaggerate the degree of uncertainty introduced by the recent revolution in theoretical physics, to which Dr. Lloyd-Jones draws attention on p. 13 of his booklet "The Approach to Truth: Scientific & Religious" (Tyndale, 1963). If the data faced by the scientist are indeed God's data to us, then radical scepticism as to their implications can have in it an element of wilful disobedience - a refusal to reach (however tentatively) the conclusions demanded by what He has given us.
- 6 H.A. Simon, "'Bandwagon' and 'Underdog' Effects", *Public Opinion Quarterly*, 1954, 245-253; D.M. MacKay, "Man as Observer-Predictor". In: *Man in his Relationships* (H. Westmann, ed.), 1955, 15-28.
- 7 I have explored the implications of this point at greater length in (a) "Machines and Societies" in: *Man and His Future* (G. Wolstenholme, ed.), 1963, 153-167; (b) "Scientific Beliefs about Oneself" in *The Proper Study* (G.N.A. Vesey, ed.), Royal Institute of Philosophy Lectures, 1971, 4, 48-63; (c) "Information Technology and the Manipulability of Man", *Study*

- Encounter*, 1969, 5(1), 17-25; (d) Chapter 3 of *Human Science and Human Dignity*, Hodder & Stoughton, 1979.
- 8 A specially illuminating treatment of this theme is given by Sir Geoffrey Vickers in *The Art of Judgment*, 1965.
  - 9 A.W. Gouldner, *For Sociology*, Pelican, 1975, p. 66. It is important not to confuse the question of objectivity in science with that of the *ethical neutrality of scientists*, which Gouldner also addresses. "If technical competence provides no warrant for making value judgments", he asks on p. 5, "then what does?". A Christian would reply that technical competence is not enough; but that the more we (objectively) know, the more accountable we are for the use we make of that knowledge in our judgments of value. Objectivity is not an *alternative* to an ethical attitude on the part of the scientist, but rather one of its preconditions.
  - 10 Note that this does *not* necessarily mean that *what God knows* is what either the scientist or Joe would be correct to believe if only they knew it; for one of the things God knows is that they do not know it!
  - 11 D.M. Mackay, *Science, Chance & Providence*, Oxford, 1978, Chapter III; *Brains, Machines & Persons*, 1980, pp. 86-97.
  - 12 Note that the impossibility of perfection does *not* imply (in either case) that the ideal is unattainable in particular instances. Sinful men can, and often do, perform righteous acts (e.g. speak truthfully); and value-driven scientists can, and often do, gain value-free knowledge (e.g. make objective measurements).

## ESSAY REVIEW

### MAN AND NATURE IN RUSSIA

All the ingredients of Darwin's theory of evolution were available to those who read contemporary literature before the publication of Darwin's *Origin of Species* in 1859 says Professor Herbert Butterfield (*The origins of Modern Science*, 1949, p.209), except the idea of struggle.

Darwin himself spoke of struggle in three ways. There was struggle (a) between individuals of the same group, (b) between enemies and (c) with fate -- for example a plant struggling to live on the edge of a desert or a bird struggling against the winter. He claimed to use the word "in a large and metaphysical sense".

The idea of a struggle as a necessary prerequisite of evolution was not slow to catch on. Before the end of the century it was generally accepted in the world of science and was being applied, too, in all kinds of directions which had not been envisaged by Darwin. In his *Popular Scientific Lectures*, first published in 1894, Ernst Mach could write in the most matter of fact way: "We speak of the struggle for existence among the heavenly bodies and for the struggle for existence in the world of the molecules." He sought to account for the growth of scientific ideas in accordance with the same principle. According to Herbert Spencer, Roux and others each part of the body, the very cells, were engaged in a struggle and just as the order of society developed out of the struggle among its members, so did the order of the human frame out of the struggles of its cells. The importance of struggle in the philosophy of life was a central belief of the Monist League which in time gave birth to Adolf Hitler who emphasized the importance of struggle between races in order that the superior race might dominate all others and if need be exterminate them.

Shortly after the origin appeared it was read by the then unknown Karl Marx. "Darwin's book is very important to me and as a basis in natural science for the struggle in history" he wrote and, again, "combat or death; bloody struggle or extinction. It is thus that the question is inexorably put." Thereafter the idea of struggle was to dominate Marxist thinking. Not struggle in the first Darwinian sense of struggle between men of near equal status, for that in the socialist paradise would lead to chaos and even to the extermination of the rulers of the socialist state. But struggle none the less. Struggle



first between the workers and the bosses in the rest of the world. Struggle between communist states and capitalist states. And struggle also between man and his environment. In the lectures given to students in Russian universities the philosophy was stressed that everything contains within itself the seeds of struggle. Matter was resolved into the opposite struggling principles of wave and corpuscle. The green plant struggles for a time to prevent the cataract of energy falling into entropy and by virtue of its struggle the plant grows. All life was a struggle between the opposing tendency of rejuvenation and senescence. (Sir Eric Ashby, *Science in Russia*, 1947, pp. 97, 117). The idea of struggle permeated the minds of the young communists and many of them stressed a struggle between man and his environment with the tragic results which are the subject of Boris Komarov's recently published *The Destruction of Nature in the Society Union* (Pluto Press, 1980, 150 pp. £2.95).

Komarov reminds us of how, in the early days after the Revolution, Maxim Gorky told the Russian people that they must make "mad rivers sane". "The life of society was shaped" says Komarov, "by people who knew only one truth — rout the adversary. Even if this adversary was rivers, forests, or the inimitable uniqueness of nature". So far as the destruction of nature was concerned, all the plans were always fulfilled and over-fulfilled. Zazubrin expressed the mood of the day in 1926 when at the First Conference of Siberian Writers he said:

Let the fragile green breast of Siberia be dressed in the cement armour of cities, armed with the stone muzzles of factory chimneys, and girded with iron belts of railroads. Let the taiga [pine forests] be burned and felled, let the steppes be trampled. Let this be, so it will be inevitably. Only in cement and iron can the fraternal union of all peoples, the iron brotherhood of all mankind be forged. (quoted p.60)

This book, written pseudonymously by a convinced communist who seeks the good of his country was smuggled out of Russia and appeared first in Germany in 1978. Despite articles in the present constitution (e.g. "Citizens of the USSR are obliged to protect nature and conserve its riches" article 67) the destruction of nature in this huge country continues apace. Laws in such matters are disregarded and no meaningful penalties are proscribed. Corruption among luxury loving party members sets the pace. Safari expeditions, often with trigger happy soldiers well armed with tanks and guns, destroy the wild life. The forests die as nearby smelters pour out fumes (often containing hydrofluoric acid) over the countryside and armies of men cut down the forests (often so that the dogma that there is no unemployment in the USSR may not be endangered) even when

the wood cannot be removed and must be left to rot. Beautiful lakes are turned into cess pools and the fish die. The Sea of Azov, once the most productive body of water in the world, now yields little more than one per cent of what it did 30 years ago.

For the army in particular poaching is a popular pastime. Party members kill vast numbers of animals for fun. Eagles, kites and birds of prey are wiped out by shooting from military helicopters for practice. Local authorities officially commandeer military helicopters for winter wolf hunts.

In the far north of Siberia organisms live at the brink of survival. Almost any disturbance by man destroys the fragile balance. Conditions are so bad for life that 30% of those who are sent north for three or four years return as invalids. The attempts to form new colonies are disastrous, for no one knows how to build on permafrost, or what to do about sanitation and garbage. The small but unfortunate native tribes who lived in these regions suffer greatly as the Russians try to introduce technology but succeed only in destroying the local culture. A journalist visiting a northern school asked the children how they spent their holidays in the tundra. The children muttered the answers they were expected to give, but one little girl told him quietly, "I saw the shaman. He came to us when we were pasturing our deer. He prayed." "What did he pray for? Did he ask God for good weather?" "No he asked for the Russians to go away."

"Not a single Soviet writer, whether communist or not communist, has found any moral basis for his appeals to save nature beyond somehow camouflaged religious doctrines ... [two writers are cited who] have turned to the idea of God or the immortal spirit in the face of a growing barbarism. They cannot find other absolute, non-transitory values... Clearly it is only through the development of profound, basic ideas about human existence that such a harmony ... should be sought. But in our society virtually all spiritual literature, all modern philosophical literature, to say nothing of religious literature of various persuasions, is available to almost no one and cannot have any influence on social consciousness" (p.73).

The terrible fact is that all this destruction, though well known to the VIPs, is kept hidden from the people. For window dressing a few projects for saving the land are given inordinate publicity even though the rate of destruction is ten times that of construction.

The book is well produced, easy to read, highly factual and well referenced. Above all it is sincere: it is not intended to be used as anti-Russian propaganda and the author is well aware that similar problems have faced the West.

REDC

# REVIEWS

R.K. Harrison, *Leviticus, An Introduction and Commentary*,  
1980 Tyndale Old Testament Commentaries, IVP, 253 pp,  
PB £3.95, casebound £4.50.

It is widely held that, except for those who delight in allegory and spiritualizing, Leviticus has little value for the Christian today. This attitude has been helped by the absence of helpful commentaries for the ordinary reader, though this absence may well be due to the lack of demand for such works.

Professor Harrison is well qualified to write this commentary on Leviticus. As his Introduction to the Old Testament (same publishers) showed, he is an authority on OT criticism and is also well versed in archaeology, so far as it concerns the Bible. Here too he shows a mastery of the natural sciences, especially in the field of hygiene.

The value of the work is enhanced by the author's refusal to waste time on allegory. His interpretation of what the ritual commandments and prohibitions should have meant to the Israelite is normally reasonable and probable, as is his explanation of many of the food and behavioural laws. His typological application of the sacrifices to our Lord and his application of many of the commandments to modern Christian life are sensible and usually convincing.

However, the attempt to reconcile 5:11-13 with the general principle "without the shedding of blood there is no remission of sin" (p.71) hardly carries conviction. The statement on p.61 that *hatta't* "comes from a verbal form meaning 'purify'" seems impossible to understand. It comes from the normal root meaning *to sin*, and it is used almost equally for sin and the sin-offering. In the light of a good deal of dogmatism on the subject, especially in America, it is a pity that there is so strong a suggestion on p.81 that tithing brings blessing to those who practice it. Rabbinic exegesis in connection with the Passover lamb does not justify the dogmatic remark (p.104) that the sacrificial lamb had to be less than a year old.

These are minor blemishes in an excellent work. It is to be hoped that if we have another edition, it may include a tabular survey of the main sacrifices, from which the main differences would be immediately visible. Equally more attention should be given to the fact that the sin-offering had to be eaten by the priest, thereby demonstrating that though it had been equated with the offerer's sin, even bearing the same name, it had not become sinful.

H.L. ELLISON

Pierre-P. Grassé, *Evolution of Living Organisms*, Academic Press, 1977, 297 pp., £15.30.

The name of Grassé is a household word amongst zoologists. Working at the University of Paris he has made original contributions in several branches of zoology, but he is best known for his editorship of the 35-volume *Traité de Zoologie* (1948 - 72), the most recent of the comprehensive treatments of the subject.

In this book he draws upon his very extensive knowledge of the subject to criticize current theories of the mechanism of evolution. As far as the extent and direction of evolution are concerned, he adopts an orthodox view based upon a conventional interpretation of the fossil record. He argues, however, that the currently orthodox neo-Darwinism is totally inadequate to account for the evolutionary changes that palaeontology suggests.

Grassé maintains, with much supporting evidence, that mutation of genes cannot produce fundamentally new characters; that natural selection is not the universal and potent factor that it has been assumed to be; that phylogenetic changes are not necessarily of immediate adaptive significance; and that many phyletic lines exhibit a directionality not easily explained by the natural selection of random mutations. These and other arguments critical of neo-Darwinism occupy three quarters of the book, and lead to the conclusion that macro-evolution has resulted, not from the mutation of pre-existing genes, but from the development of entirely new genes in response to information gathered and stored during the life of the individual.

In the last quarter of the book Grassé develops his theory of how this might have happened. He admits that "no formation of new genes has been observed by any biologist" (p.228), but nevertheless adduces evidence for various biochemical processes that he thinks could be involved in such gene production. This part of the book is the least satisfactory, inasmuch as he nowhere sets out his overall theory very explicitly. One is almost left to guess how the pieces of the jigsaw puzzle fit together. If my guess is correct, his suggestion is that information flows as

follows: environmental and internal stimuli ----> sense organs ----> central nervous system ----> endocrine system ----> cellular metabolism ----> synthesis of new proteins including enzymes ----> synthesis of new codons in the genes or production of new effects of existing codons ----> formation of new genes. In some way, not clear to me, the whole process requires many generations to complete. Some of the links in the above chain are undoubtedly substantial: some, however, are very weak. How, for example, can the endocrine system, utilizing *existing* enzymes, stimulate the genes, consisting of *existing* codons, to control the synthesis of *new* enzymes?

However, to be fair, Grassé admits that he is far from convinced by his own "New Theory of Evolution" -- the subtitle of the book. His closing words are: "The united efforts of paleontology and molecular biology, the latter stripped of its dogmas, should lead to the discovery of the exact mechanism of evolution, possibly without revealing to us the causes of the orientations of lineages, of the finalities of structures, of living functions and of cycles. Perhaps in this area biology can go no further: the rest is metaphysics". Another point which puzzles him is that evolution virtually stopped 40 million years or more ago. "We are certain that it [evolution] does not operate today as it did in the remote past" (p. 71). He does not suggest why this should be and can only wonder whether our plants and animals are "lacking some mechanisms which were present in the early flora and fauna".

This book is not an easy one to read. It is verbose, repetitive, and marred by the defects of a rather unskillful translation from the French (*L'Évolution du Vivant*, 1973). It is, however, valuable as an up-to-date criticism of current neo-Darwinism; and may well stimulate new lines of investigation into the unanswered questions of the mechanism of evolution.

GEB

J. Andrew Kirk: *Theology Encounters Revolution*, Leicester, IVP, 1980, 188 pp, PB £2.95, *Liberation Theology: An evangelical View from the Third World*, Marshall, Morgan & Scott, 1979, 246 pp, £6.95.

Most of the peoples who live in today's world live in a revolutionary situation, a fact which theology must certainly take into account.

In *Theology Encounters Revolution*, (TER), Kirk provides a survey of those theologians who have attempted to do just this in the past two decades. He divides his chapters geographically,

examining examples from Western Europe (Moltmann, Metz, Gollwitzer), Eastern Europe (the Czechs Hromadka and Lochman), white North America (Lehmann, Daniel Berrigan), black North America (Cone), black South Africa, and Latin America (theologians of liberation, especially Segundo). Appendices on violence and the WCC are also included in this survey; these are valuable for a newcomer to the field like myself. Only in the final twenty pages do we find a hint of the author's own concerns and convictions; he holds that the Bible does not support a static social order, and so wishes to develop a biblical hermeneutic that is true to Scripture yet truly engaged in the political situation. (This point is considered in more detail in *Liberation Theology*).

Kirk's method of presentation in TER is interesting in that he departs from the 'history of ideas' framework that usually governs potted Christian introductions to an intellectual field. Rather than trace ideas, abstractly defined, from early origins to the present, he looks at each group of authors not in their intellectual context so much as in their *political* context. In doing so Kirk accurately expresses a basic belief of liberation theology: that ideas, including theological ideas, do not exist in the abstract and are developed, not in ivory tower isolation, but as reflections upon actual material, historical, political conditions. The ultimate determinants of one's theology are whether one has enough to eat and whether one is dominated by some other person, class or nation, not which philosopher one read at school.

If this book serves to introduce some British Christians to a corpus of theological reflection about society that they had not previously taken seriously it will have served a useful function. In recent years, there has been much talk of a renaissance of evangelical social concern but, amazingly, little of this really grapples with the main hope that Marxism offers the poor, even less does it concern itself with those other Christians who in recent years *have* tried to grapple with the problem. Instead, we find socially concerned Christians sold either on some kind of reformist developmentalism which believes the world economic order may be reformed by example and pressure but without force (I am thinking here, for example, of Tear Fund and the magazine *Third Way*); or on the belief that structures for society were laid down at creation (e.g. the Lutheran notion of 'creation orders') and merely need 'unfolding' (e.g. Dooyeweerd). Rather, for Kirk, "because creation is a continuing process of divine activity in which man, through his work, joins with his Creator, new structures may constantly replace obsolete ones" (p. 167). Revolutionary theology does not have all the answers, but it certainly poses a lot of awkward questions which many of us have been ducking for too long.

The other book, *Liberation Theology*, (LT), draws on the author's PhD thesis written while he was teaching theology in Buenos Aires; as a non-theologian I found it heavy going. It is concerned specifically with the (Catholic) Latin American form of revolutionary theology that has come to be known as liberation theology and whose significance cannot be underestimated: "It is probably the first non-imitative theology to have sprung from the Third World nations; indeed, the first creative theological thought to have arisen outside of Europe or North America since the earliest years of the Church" (p. 204). Kirk examines the teaching of five theologians in particular: Assmann, Gutierrez, Segundo, Croatto, and Miranda, his aim being to examine critically how they handle Scripture. Thus the book is about hermeneutics, about how we interpret the Bible, about theological methodology.

I shall discuss two of Kirk's themes in *LT*: the centrality of praxis, and the continuum of revelation.

*The Centrality of Praxis.* Kirk believes that the theologians of liberation do us a great service by condemning a western theology that has long been infected by the Greek tradition of abstract, idealist philosophising. He contends vigorously that the basic locus for theology is *praxis*: the real world in which we are called to obey Christ. This requires a totally new methodology. Miguez Bonino has pointed out how traditional western abstract theologising about ideas has virtually no precedent in Scripture, for "what we usually find there is the story of a particular situation of a people of God, and how the Word of God comes to comfort, to admonish, to command, to advise, to correct or condemn God's people in such a situation" (p. 206). In their condemnation of western theology, it seems to me that liberation theologians are saying what the ordinary western person-in-the-street has been saying for centuries (that theology is airy-fairy speculation for professors and bishops), but unlike western theologians they have insisted that this criticism is *true*. Perhaps one needs the distance of the Third World to see this.

*A Continuum of Revelation?* Does the NT 'fulfil' or 're-interpret' the OT? This question is central; liberation theologians believe that it is a process of re-interpretation, a process that does not cease with the NT but one in which we may participate today. Kirk fears here that liberation theology seems to be setting the poor of the Third World up as a new authoritative *magisterium*, to replace the Catholic hierarchy, with the right to interpret Scripture and define new doctrine. Nevertheless, he strongly believes that the poor are in a uniquely advantageous position to see *some* aspects of the gospel hidden from the affluent. Personally, I have found valuable Segundo's emphasis on the role of the Holy Spirit in continually making the good news alive in every generation; in contrast, traditional western Christianity has

allocated the action of the Spirit to the practical outworking of Christ's love in our lives and has more or less banished the Spirit's creative activity from the intellectual realms of thought and theology.

J.A. WALTER

Leonardo Boff, *Jesus Christ Liberator*, SPCK, 1980, 323 pp, PB, £5.50.

Leonardo Boff is a Franciscan priest and Professor of Theology in Brazil. When his book was first published there in 1972 the social revolutionary perspective of Latin American Liberator Christology could only be drawn in lightly if censorship was to be avoided. The Epilogue added to the English translation entitled with fine irony "A View from the Periphery" makes it clear that the cry for social justice is not merely an implication of the Christology but the main constituent of its very foundation. The Christ portrayed is the deliverer of the underdog, a revolutionary, accused as and executed for being a guerrilla fighter. He comes to break oppression to set the prisoners free, not just of personal sin, but of social, economic and political bondage. Every Christology, says Boff, is relative to the background from which it springs and will be partisan and committed to a programme of maintaining or overthrowing a *status quo*. The trouble with this standpoint is that it transforms Christian doctrine and any fresh expression of it into an ideology in the Marxist sense, i.e. the propaganda of a particular case. Boff faces frankly that Jesus Himself did not organize to take over political power but, sharing the cultural horizon of his contemporaries, expected the establishment of the Kingdom of God to be a gratuitous work of God. Now that we see that the parousia has been delayed and that history has a future we can and should relativize the attitude of Jesus and put together a political programme. Fortunately in the rest of his book Boff is much less obviously bound by such a commitment and, save where out of what appears to be a reluctance to waste a well turned phrase, he indulges in uncritical eclecticism he is remarkably successful in restating orthodox Christology in modern terms.

ALAN WILLINGALE

James H. Casson, *Dying*, 1981, £0.60; Janet Goodall, *Suffering in Childhood*, 1981, £0.75; C.G. Scorer, *Healing: Biblical, Medical and Pastoral*, 1979, £0.35. From Christian Medical Fellowship, 157 Waterloo Road, London, SE1 8XN.

These pamphlets are uniformly helpful. Dr Casson who died young leaving a family, tells us of his closing thoughts and of the Scriptures which most afforded him comfort. Dr Goodall, in this Barnardo Lecture, tells of the harm that is still done to children. Dr Scorer reminds us that "Scientific Medicine... is only relevant if practiced with a true understanding of the human heart."



A.C. Thistleton, *The Two Horizons; New Testament Hermeneutics and Philosophical Description with special Reference to Heidegger, Bultmann, Gadamer and Wittgenstein*, Paternoster Press, Exeter, 1980. Pp. xx + 484. £15.

Hermeneutics has by now an honoured place in the theological and philosophical borderlands. Dr. Thistleton's book gives detailed and scholarly treatment to the complex of issues gathered under the German rubric *Hermeneutik* — that is, the theory of how understanding takes place, of the interplay of the 'two horizons' of the interpreting subject and the object of interpretation. Indeed, this work is arguably the most sustained review of the matter since Funk's book *Language, Hermeneutic and Word of God*, and in its critical engagement it is superior to the exposition offered by Palmer's *Hermeneutics*. It must become a standard treatment.

Two introductory sections of the work open up the hermeneutical question, showing it to be far more than simply the elaboration of a set of rules for exegesis. Hermeneutical reflection seeks to give a comprehensive alternative to the epistemological dualism between subject and object which can be traced back to Descartes, and in particular to offer a theory of interpretation which takes full account both of the autonomy of the object and the 'historicality' of the subject. This theme is elaborated by a consideration of the historical distance between 'text' and interpreter, of the relation of hermeneutics to specifically theological epistemology (here Dr. Thistleton argues persuasively for the necessity of hermeneutics), and of the relations of hermeneutics and philosophy of language. This last introductory section outlines the book's underlying thesis — that *both* hermeneutics and linguistic and semantic investigation are part of the proper response to the text, and that exclusive concentration on one model of interpretation fails to achieve that 'fusion of horizons' in which true understanding takes place.

The third, and by far the largest, section of the book gives a highly technical account of the four major figures on whom it focusses. The author's immense resources of erudition and the clarity of his exposition of highly abstract trains of thought can hardly be over-praised. Heidegger is examined both in his early work *Being and Time*, and in cryptic later works on the relation of being to language. The treatment of Bultmann is particularly interesting in its emphasis on the influence of Marburg Neo-Kantianism and the resultant dualism between 'meaningful' and 'objective' history. Gadamer is interpreted partly from the perspective of the help he offers on the vexed question of the relation of exegesis to systematic theology, and partly for the influence of his views on the irreducibility and authority of linguistic objects (views derived from the later Heidegger) on the 'New Hermeneutic' interpretation of the New Testament — in particular the parable-exegesis of Ernst Fuchs.

The inclusion of Wittgenstein in a book devoted to hermeneutics is striking, and here Dr. Thistleton is breaking new ground. Wittgenstein's exposition can be an indescribably tedious affair but the treatment of his later work, after the abandonment of the *Tractatus*, is perhaps the best part of the book. The author argues that an appropriation of some of the central motifs of Wittgenstein's thought can help us respect the particularity of the text, attending to its specific 'language-game', its 'life-situation'. The discussion is earthed with examples from Pauline interpretation.

Above all, it is this synthesis of insights from broadly different (often, indeed, antithetical) traditions which is the strength of the book, showing not only a firm grasp of many disciplines but a refusal to cut corners, an appreciation that hermeneutics, linguistics, semantics are *all* useful in elucidating what the Bible means. If this is the book's strength, it is also its weakness, for a very large part of it is taken up with the description and analysis, not only of the major figures, but also of the secondary literature which has grown up around them. At times, it is rather like an over-stocked art gallery: indigestible, tedious, with the attendant danger of passing over a pearl of great price. Some of the insights are buried in scholarly rubble, some of the best pieces of argument are conducted in a graceless, heavy 'thesis' prose.

But the conceptual rigour, the thoroughgoing desire to do justice to the complexity of the issues, outweigh these blemishes. Hermeneutics easily becomes a magic potion to effect all manner of theological and philosophical marvels. Dr. Thistleton is much too hard-headed for that, giving us no unproblematical answers, no solutions without the hard grind which this book contains and in which it invites the reader to participate. The effort will not be wasted.

J. B. WEBSTER,  
TYNDALE HOUSE,  
CAMBRIDGE.

Alan Storkey, *A Christian Social Perspective*, IVP, 1979,  
PB, 416 pp, £8.50

"In Britain there is painfully little that could be described as Christian social political and economic understanding." (p.406)  
It is with this premise that Mr Alan Storkey bravely sets out to develop a framework for Christian social action and understanding in today's world. No easy task to be sure! A varied range of social issues including sociological and economic theories and the affairs of local churches, are covered - and the coverage is far from superficial.

The first of the three sections of the book examines the claim of sociology to be an objectively based neutral science and asks how and whether a Christian and biblical framework for a society can be developed to make effective impact on the modern world. Primary sociological concepts such as community and class, the family, marriage and the mass media are then discussed.

Discussions of politics, the State, economics and the church follow. For the general reader some of this is hard going: I found the sections on economic theory and the theory of sociology rather difficult, but the reader can go straight to subjects that interest him and later return to the more theoretical sections without significant loss of context.

In the political section the author summarises the basic philosophies of the three main parties and goes on to suggest that, rather than having a fragmented Christian witness in each of them, Christians should form a Christian party with a programme based on a thoroughly biblical perspective.

It is argued that a political party "should merely seek to witness to what it believes to be true" (p 284). This has some interesting implications for the power political parties wield. Though many European countries have Christian parties, I question whether such a party would be able to grow in the anti-religious climate of this country. Even if it did establish itself, would it not face opposition from church leaders and ordinary Christian voters, especially those who still believe in the medieval RC division between the secular and the sacred?

In exploring the nature of marriage and the family, Mr Storkey sees them as two separate institutions which have unfortunately become too closely linked in peoples' minds. They need to be viewed separately, he says, for each has its own hierarchies and social constructions.

Faith is basic to both - indeed one might say that the whole book is concerned with the nature of 'faith' in our society and how it undergirds all our lives whether in sociological thought, political perspectives or marital and class relationships. This secular 'faith' is in conflict with the faith of Christianity as it is basically humanistic in our polytheistic and multi-cultural society. Mr Storkey outlines the development of humanistic 'faith' and asks how we, as Christians, can build our own institutions to further the "growth of the rule of God rather than the rule of man" (p.413) in society.

The book ends on a challenging note. It draws attention to the attack the church is under from the secular world and stresses the duty of all Christians to join in the battle. We have been cut off from society for too long, have concentrated on ourselves as

individuals too much, while our only corporate activities have been confined within the church. Instead we should join together in society and set up Christian banks, trade unions, estate agents, garages, educational centres, broadcast groups, etc. "The self-glorification of Christians and of the church, the intellectual pride, the fear, the faithlessness, the weakness and social conformity which we Christians have displayed is obvious and requires repentance" (p.121).

The suggestions made in this book as to Christian duty may not be the only possible ones, but Mr Storkey offers us a practical and biblically principled framework, a task which few other Christian writers have attempted in recent years. The publishers are to be warmly commended for their insight in producing such a book which should be imperative reading for would-be sociologists, economists, social workers and all thoughtful members of the Christian church. It is well indexed and referenced.

GRAHAM DOVE

Richard Lovelace, *Dynamics of Spiritual Life: an Evangelical Theology of Renewal*, Paternoster Press, Exeter, 1979, 455pp, £4.50.

It may well be a divinely planned coincidence that has given us two mature books with very similar titles within a short time of one another. *The Dynamics of Religion* (Darton, Longman & Todd) by our own Bruce Reed just preceded this present book from America. Both are superb, but their angle of approach differs. Bruce Reed angles his investigations as a member of the Grubb Institute of Behavioural Studies, while Lovelace writes as a professor of Church History, soaked in his subject, which includes a depth study of the rise and fall of evangelical life in past and present history.

Lovelace has American movements especially in mind, and he makes considerable use of Jonathan Edwards and Cotton Mather, but his reading has made him familiar with movements throughout the Church in general. His aim is to look for the possibility of continuous renewal along lines advocated by thoughtful Christians, Puritans, Pietists, Penecostals, and preachers like Moody and Torrey.

An unusual word that crops up in this connection is *disenculturation*, which describes the basic result of true revival, when the Church breaks away from an uncritical acceptance of world values. Lovelace does not hold that this is possible without a sound grounding in the basics of the New Testament Gospel. So he writes of God, sin, and judgment, with forgiveness and new life in Christ, in place of an easy going 'all will be well'. He also has a place for an awareness (though not an obsessive awareness) of Satan as a strategist against God.

His concern for social responsibility as vital for renewal leads him to consider this as a basis for reunification. The evangelical is not happy with the World Council of Churches and certainly not with humanism, and yet he may find himself called to work with them in some of their 'Christian' social aims. Lovelace, who was converted from atheism through reading the Roman Catholic Thomas Merton, is more open to other Christians than are some evangelicals, and he struggles to bring together the two poles, namely an evangelical zeal to preach the Gospel and a liberal desire for social reform. Can they ever be united in real renewal? And then there are the two poles of intellectualism and piety within the conservative fold.

Lovelace is not afraid to discuss the forms of millennialism. He appears to come down on the side of premillennialism, but distinguishes the passive and rather popular form of waiting for the inevitable end in a year or two, from the active challenge to work for revival of the Christian faith and moral standards in the world in answer to the falling away.

A few chapter headings show the scope of the book. Thus, How revivals go wrong (through the world, flesh, and Satan, and also bad theology), Live orthodoxy, Unitive evangelicalism, The spiritual roots of Christian social concern (e.g. Wilberforce and others), and Prospects for Renewal.

We who are older will see the point of the chapter on the Evangelical Muse, even though we may not share the author's enthusiasm for many of the modern trends in music, poetry, drama, and art. Maybe there is an answer in a sentence which is relevant for the theme of the book, "If a whole generation of young evangelicals can mature in their spirituality, and if older evangelical leaders can expand their vision, we have the potential for a new level of evangelical impact with the church and on society" (p.399).

J. STAFFORD WRIGHT

Brian Milne, *We Belong Together*, PB, IVP 1979, £0.95

There are not many books devoted entirely to the subject of Christian Fellowship and for this reason alone this study by a lecturer at Spurgeon's College is very welcome indeed. The author has read widely and, unlike so many evangelical writers, does not hesitate to let his knowledge of psychology illuminate his points from time to time. As an Anglican and reviewer I particularly appreciated the chapter headed 'The fellowship meal' in which true *koïnonia* is shown to include not only the spirit in which we should come to the Lord's Supper, and the spirit which should be further engendered by the sacramental meal, but also the very real fellowship true believers can experience at that service with the risen Lord Himself. A splendid book.

HUGH EVAN HOPKINS

Michael Wilcock, *The Saviour of the World*, PB, IVP, 1979  
£2.85

The purpose of the series of Bible expositions of which this is one is declared by the editors to be to expound the biblical text with accuracy, to relate it to contemporary life and to be readable. In taking the Gospel of Luke as his subject the author, who is on the staff of Trinity College, Bristol, is treading on ground well cultivated by others. But he hopes his treatment will differ from theirs in being more of an aerial view of the whole pattern of Luke's work than a detailed commentary. He tries to show how successful the apostle was in producing 'an orderly account' (1:3) of the life and work of Jesus. On this point he has a touch of originality in his book, but he does not seem to have been so successful when attempting 'to relate it to contemporary life.' The application of the Lord's parables, for example, in terms of the life and ethics of today would no doubt have made this study inordinately long. Certainly Michael Wilcock has succeeded in producing a very readable book.

HUGH EVAN HOPKINS

E.L. Mascall, *Whatever happened to the Human Mind?*,  
SPCK, 1980, 175 pp, PB, £3.95.

In five essays on Christian Orthodoxy, the first four of which form a sequel to his earlier *Theology and the Gospel of Christ*, Dr Mascall defends the Intellectual Principle, the present relevance and feasibility of the Chaledonian formula, the compatibility of the Impassibility of God with the compassion and suffering of the Incarnate Son, the identity of the economic and the immanent Trinity and the maleness of the whole Triune God. By the Intellectual Principle he means the capacity of the human mind both to apprehend realities other than itself and to know the truth in the sense of conformity of mind with reality. Armed with it he attacks the modern theological relativism of investigating only whether the incarnation myth provides a useful model for twentieth-century religious experience. Chalcedon, by contrast, meets two demands which new Christologies are incapable of satisfying together, *viz* a complete and concrete human nature in Jesus and an intimate involvement of God in his Passion. The alternatives are a merely human Jesus a 'man for others' or even a 'man for God' but no more, or the kenotic solution of God as the subject of the Incarnate Son but geared down to human scale. Following Dr Thomas G. Weinandy he reconciles divine immutability with the Incarnation, reading the "becoming flesh" not as a change of nature, but as "a coming to be man", the adoption of a new mode of existence. The fourth essay which is a critical review of Dr G.W.H. Lampe's Bampton Lectures argues that unitarianism does not do justice to the Christian Revelation. The fifth boldly contends for the essential masculinity of God.

ALAN WILLINGALE

Martin Middlebrook, *The Battle of Hamburg*, Allen Lane, 1980, 424 pp., £6.95.

Middlebrook has written several books about WW2 before, including one on *The Nuremberg Raid*, the greatest RAF disaster of the war; Nuremberg was hardly damaged but 13% of the bombers did not return. In this well illustrated book he turns to the greatest 'success' of Bomber Command, the raids on Hamburg at the end of July 1943. It can be said at once that Middlebrook has done his homework more than thoroughly, that he writes extremely well and that having started to read the book I for one found it difficult to stop.

War history is, of course, outside the purview of VI interest, but moral issues are not. Middlebrook has been at great pains not only to describe the battle objectively from both the British and German angles, but also to try to understand the bravery, the suffering, and the consciences of those who were involved.

It would be impossible to summarise all that is said here. Some of the salient points which emerge are these.

(1) After WW2 had commenced Prime Minister Chamberlain said in Parliament, "Whatever the lengths to which others may go, His Majesty's Government will never resort to the deliberate attack on women and children and other civilians for the purpose of mere terrorism".

(2) In Area Bombing Sir Arthur Harris deliberately aimed at producing this terror.

(3) The bomber crews were volunteers but they volunteered only for flying duties, not for bombing civilians.

(4) Hamburg, population 1.75 m, was somewhat less identified with the Nazi regime, as shown by voting figures, than any other large German City.

(5) The submarine yards on the south bank of the Elbe were not bombed by the British, but only the residential area to the north where the men had been called up and the population consisted mainly of women, children and old people.

(6) On one single night, 27-28 July 1943, the night of the firestorm which devoured 4 square miles of city, 40,000 people were killed. "Hamburg's night sky became in minutes, even seconds, a sky so absolutely hellish that it is impossible even to try to describe it in words...No noise made by humans -- no outcry could be heard. It was like the end of the world. One could think, feel, see and speak of nothing more" said one who viewed the scene from a gun battery (p. 257). A shrieking howling blizzard raged through the city; asphalt in the streets melted and people got stuck in it, feet first and then hands; men were blown over, others turned suddenly into flaming torches; clothes were blown off leaving people stark naked to be burnt

alive or die from CO poisoning; "the smallest children lay like fried eels on the pavement" (p. 276); trees were burnt and uprooted by the wind; Middlebrook has been unable to trace a single survivor who stayed in a basement shelter. In the large municipal shelters people sat, silently, all of them praying. The next day, 28 July, 1,200,000 people were evacuated and the RAF renewed the attack on the night 29-30 July, burning up much of the rest of the residential area of the city.

(7) In England every effort was made to hide what was happening; the lie that military targets were uppermost was always insinuated if not stated by the media. George Bell, Bishop of Chichester, who was not a pacifist, protested often, but was mercilessly attacked and received no help from Archbishop Temple who, however, was told lies when he made enquiries.

Why? Harris had the idea that terror bombing would make the Germans surrender. It did not work. German determination to win the war became firmer than ever.

What of those who did the bombing and whose bravery was superb? Today most of them who are alive think they did the right thing and would do it again. But not all. "Raids on our cities helped to still the small voice of conscience but it worries me still to this day." "Whatever statesmen and braided air marshals may say and write, it was barbarous in the extreme. 'Whoever harms a hair of one of these little ones...' I expect no mercy in the life to come. The Teacher told us, clearly. We disobeyed" (p. 349).

Bomber Command devoted some 46% of its wartime efforts to bombing civilians of whom 500,000 were killed at a cost of one airman for every 200 killed (p. 338).

This is a brilliantly written book: almost essential reading for Christians who are wondering how they should react should the State once again call them to engage in war.

REDC

David Field, *The Homosexual Way: a Christian Option?*, IVP, 1979 (Revision of 1976 edition), 48 pp, £0.60.

This is a beautifully written and helpful booklet which deals fully with arguments in favour of condoning homosexual behaviour. The author argues that the force of Romans 1:23-27 can only be understood if we realise that the context is speaking of *exchange*. Man exchanged the glory of the immortal God for futile god-substitutes. Women as well as men exchanged natural relations for unnatural. This is an extension of the bad exchange which



man has made in respect of God: the meaning is not that individual men have left their wives in order to seek sexual satisfaction with their own sex. By unnatural Paul means "unnatural to mankind in God's creation pattern" a pattern which is heterosexual. The closing section is written with true Christian sympathy. The author urges all Christians to bring the utter loneliness which homosexuals feel to an end by showing them the love of Christ.

REDC

Satish Kumar (ed), *The Schumacher Lectures*, Blond and Briggs, (Victoria Works, Edgware Rd, London NW2 6LED), 198 pp, £7.50.

The late E.F. Schumacher is best known as the author of *Small is Beautiful*. He urged mankind to decentralize: for the Third World he looked for hope only in low capital and labour intensive projects. "The larger the system the more mediocre" he would say; or again "In the subtle system of nature, our technology acts like a foreign body, and there are now numerous signs of rejection."

This book is a collection of lectures of varying quality given by those who have been impressed by Schumacher's teaching. The general tone tends to be anti-scientific, anti-Christian, and pro-mystic, but never aggressively so. R.D. Laing tilts at the absurdity of materialistic teaching such as that of Monod who says, "Ethnics, in essence non-objective, is for ever barred from the sphere of knowledge." In his thirst for measurement the scientist, according to Laing, discards values and behaves as if the quality of a novel can be ascertained by determining the percentages of the parts of speech employed. This chapter, which repeats in substance what Eddington said half a century ago, is hardly impressive. It is sad to note that Laing, despite a Christian background (see this JOURNAL 106, 23) now seems to have little respect for the teaching of our Lord: "If you treat me in a way that I feel is unreasonable, then I shall respond to you in a way that you won't like...that's the sort of guy I am" (p.20).

Ivan Illich makes an impassioned plea for the value of language. "Each man is born to have a perfect dominion of his tongue" (Queen Isabella) Man needs no wealth, no higher technology, to use and enjoy language. In countries where language is thought of almost as a sacred heritage, old stories are learned by heart and transmitted without change from generation to generation. Creative poetry is also common. In Malaysia, Illich says, "I have seen people, the poorest people, on the street corners, sitting there all night composing *fantungs*. You make a verse of two lines, then I do the same; we might go on through a whole moon-night" (p.81). The biblical relevance of this is obvious.

John Mitchell writes on the "Ideal World View". There are two competing world myths today, he says - the Newtonian Myth that the world is a great mechanism and Plato's Myth that the world is a living animal. Truth and evidence have no meaning for Mitchell: one has only to choose the myth which seems most useful regardless of what experts may have to say. In support of this attitude he joyfully quotes the 'law' enunciated by that arch cynic Charles Fort: "For every expert there is an equal and opposite expert". So the world *is* an animal. Now if you keep an animal you must look after it. The Big Animal is losing its hair (deforestation) and there are blemishes on its skin (artificial deserts, areas despoiled by industry etc). ...Sickness of any part of the body is sickness of the whole: so the Animal is suffering from a disease, the disease of civilisation.

Corresponding to the two Myths are two cosmogonies. (1) The expanding universe theory which links with bigger-is-better philosophy, with social Darwinism and the apes-to-space-men view of history. (After raping this earth to get off it, its devotees dream of raping other planets too.) (2) The ancient pagan theory of cycles (see this JOURNAL 102, 109) so unfortunately replaced by the idea of Christ as the once-for-all Redeemer. The first view puts science at the top: races without it are at the bottom of the league table and will not survive: "survival of the fittest" was their death sentence. Adapting Darwin's struggle theory Marx saw history as a struggle for power "and Hitler, a confirmed Darwinian, acted quite logically in terms of his belief when he undertook to make his people the fittest and most dominant at the expense of others. Recently and significantly, when the Communists took over China, the first new text introduced to all the schools was not Marx or Lenin but Darwin. Mr. Heath when he visited China as Prime Minister, was told that an acceptable gift for Chairman Mao would be a first edition of Darwin's *Origin of Species*" (p.106) Darwinism is a tyrant's and racists charter, concludes Mitchell.

But, the Chinese, he thinks, are wiser than we: traditionally they discourage invention lest it prove socially disruptive. It will enrich the merchant class putting them in a position to dictate to government in its own interest. So, if a man was rich, the Chinese refused him access to power, and made of him a retired scholar instead. (The Chinese seem to have learned by bitter experience. After the discovery of gunpowder before this invention reached the West they suffered terrible devastations from explosions in gunpowder factories and from wars of a brutal nature in which poisonous 'gases' were freely used. In China there were, I believe, no voices such as we had in the West, condemning such misuse of science as an affront to Almighty God and so delaying the break up of the social order. In the end, the Chinese seem to have survived by snuffing out inventive

science; but if this be the true story we need not, surely, be over-impressed by the wisdom of the East. Mitchell does not mention gunpowder.)

I found Mitchell's contribution the most thought-provoking in the book and it is charmingly written. But here, as elsewhere, the aim seems to be to discount the contribution of Christianity to man's welfare in favour of Eastern thought.

This point comes home strongly in the fifth lecture by Fritjof Capra on "Buddhist Physics". The physics of our day, says the writer (who has written a book on the subject) shows that particles are not things and that there is a oneness of the universe — "a cosmic web of relations". (p.131) All of which helps us to understand the connection between mind and matter. In Buddhist physics you need to start by thinking of the whole pattern and only after that do you think of about individual patterns.

The lack of historical perspective in such a presentation of modern physics is little short of amazing. A century and a half ago the Boscovich view of the atom as an immaterial point was widely held. Faraday viewed the world as a web of electromagnetic lines of force -- he uses the word *web*. The idea of the universe as a unity is basic to Newtonian theory according to which every particle in the universe attracts every other: this law expressing unity has to be formulated before any of the detailed applications of the law can be considered. But today, when modern physics underlines some of these basic ideas enshrined in old time physics, news is spread abroad that oriental mysticism has the key to true knowledge and Christianity was misguided. If this be so, how comes it that Buddhists rather than Christians did not become the creators of modern physics?

There are six main Lectures in all and much is well worth reading especially as they reveal some of the avenues of thought being explored by non-Christians today. The inclusion of Edward de Bono's chapter on "Lateral Thinking" is also a stimulus to thought: let us hope that some readers will think laterally about some of the ideas expressed and discover that the Christian faith is not so phony after all!

REDC

John H. Leith, *Introduction to the Reformed Tradition: A Way of Being the Christian Community*, Saint Andrew Press, Edinburgh, 1978; 253 pp, PB, £4.25.

Professor John Leith of the Union Theological Seminary, Richmond, Virginia, the premier divinity school of the Presbyterian Church in the US, is very much aware of the necessity and value of a

biblically related tradition such as the Reformed, and he is equally aware of the church catholic: this is clear from the subtitle of his book which testifies to the current interest in America in individual Christian heritages. In the UK this heritage is represented, primarily, by the Presbyterians and Congregationalists, (now the United Reformed), the Baptists and the evangelical wing of the Church of England.

Leith hesitates to define 'Reformed' very closely because of the richness and variety of this tradition. In practice, however, he concentrates his attention on Calvin, British and especially American (often Southern) Presbyterianism (the Puritan and Westminster Confession range of influence), and the "neo-orthodox" extensions and criticisms of this heritage. He prefers Calvin, Barth, and the Niebuhr brothers (H. Richard and Reinhold) to seventeenth-century Calvinist scholasticism, which he nevertheless treats with respect. The Ulster Scots in the Old and New Worlds (presumably his ancestors) are singled out for special affection (pages 43, 47, 208f, 220, 227), whilst he plainly sights the continental Reformed of Switzerland (except Calvin), Germany, France, the Netherlands, and Eastern Europe (contrast Osterhaven's book). Leith distinguishes the Reformed community from the Lutherans, the Radical Reformation (Anabaptists), and "the Anglicans" (left undefined), although he recognizes the Reformed treatment of pre-destination and the Lord's Supper in the 39 Articles, as well as the powerful Reformed influence in the Church of England up until the Restoration, from which time the Reformed community survived among the English Baptists, Congregationalists, and Presbyterians (pp. 23, 42). The Methodists go unmentioned. The inclusion of the Baptists among the Reformed may help to explain why Leith omits any discussion of the covenant or infant baptism as one of the Reformed distinctives (note also Karl Barth's rejection of infant baptism). More controversial, perhaps, is his list of "representative Reformed theologians," to each of whom he devotes a page or two. On this "role of honor" are found such none-too-surprising names as Calvin, William Ames, Francis Turretin, Charles Hodge, and Karl Barth and others.

Leith's volume is not only about Reformed theology. It is about the Reformed community in all its manifestations. The opening chapter is a creative treatment of the subject of tradition. Subsequent chapters survey the history of the Reformed churches, the ethos of the Reformed tradition, Reformed theology, Reformed polity, Reformed liturgy, and the relation of the Reformed community to culture. A penetrating final chapter ("Prospects") looks at six main challenges to the Reformed tradition in the difficult days to come. The chapter on the Reformed ethos contains a discussion of "the majesty and praise of God, the polemic against idolatry, the working out of the divine purpose in history, ethics, the life of the mind as the

service of God, preaching, the organized church and pastoral care, the disciplined life, and simplicity." The chapter on Reformed theology treats of its characteristics (catholicity, theocentricity, biblicality, its emphases on predestination, the Creator-creature distinction, theology as a practical discipline, and theology as wisdom), the five periods in the development of Reformed theology from the Reformation until the present, representative theologians (see the preceding paragraph), and confessions. The chapter on Reformed polity indicates that church government is subordinate to the gospel and that Reformed organization is more fittingly but not necessarily presbyterian rather than episcopal or congregational. In the chapter on the Reformed contribution to culture, Leith discusses Rembrandt, Milton, Bunyan (a Baptist), church architecture, the Genevan Psalter, schools and colleges, and the indirect influence on science, democracy, and capitalism. The book contains nine appendices scattered throughout it, e.g. numerical membership of the various Reformed churches around the world, diagrams of the Presbyterian churches in Scotland and in the United States, lists of Reformed theologians, confessions, polities, liturgies, and directories. There are also subject and name indexes for the eight chapters and the appendices, but not for the very helpful, extensive bibliographical end notes (pages 224-245).

The British edition is a reprint of the American edition (John Knox Press, Atlanta, Georgia, 1977) and is approximately the same price (\$10). The only differences are that the American edition is hard cover and not paperback, has significantly wider margins, and contains sixteen glossy portraits or photographs of leading Reformed personalities. Unfortunately, the British edition does not even bother to excise Leith's line on page 9 thanking I. John Hesselink for the photograph of Karl Barth and Emil Brunner! Furthermore, there are a number of typographical errors.

Although Leith's book is obviously written by an American for Americans, it is still a very reliable, readable introductory guide to the Reformed tradition, broadly conceived. It is both comprehensive and concise, with about the right blend of sympathy for, and critical distance from its subject. With a few reservations, I heartily recommend this volume for clergy and laity, Reformed and non-Reformed alike.

E. W. KENNEDY

(Professor of Religion, Northwestern  
College, Orange City, Iowa 51041 USA)

(We apologize to Professor Kennedy for the reduction in the length of his review owing to lack of space - Ed.)

Daniel Rees and Others. *Consider your Call; a Theology of Monastic Life Today*. SPCK, 1978/80. 447 pp. £6.50.

It is surprising how much a non-Catholic can find in this large book, now reprinted, which is essentially a specialist work on Roman Catholic Benedictine monasticism. Anyone who has had some fellowship with Roman or Anglican Benedictines will find this an informative syllabus of the monastic life. Yet this is only one side of it. There are the two aspects of the Rule of St. Benedict. One is the organised plan of life, with the abbot as head, and this may need some adaptation to modern times. The other aspect is the spiritual life, perhaps also needing some fresh approaches, and this also receives a full treatment here. One imagines that this is the material that the publishers rightly suppose will be of interest to the readers of this journal, since the spiritual concern of the monk does not differ essentially from that of the everyday Christian. Thus "the faith required of a monk is essentially the belief that he lives in the presence of God, and that God is always near him." (p.281) So we have two chapters on personal and corporate prayer, including a cautious, though positive, discussion of the charismatic renewal. Naturally one chapter takes up the importance of the study of the Bible, which has been such a feature of recent Roman Catholicism. The chapter on the Eucharist concentrates on the dynamic meaning of the sacrament, while that on the priesthood makes much of the priesthood of all believers.

This is not the presentation of the Romanism with which I once contended, perhaps justifiably. Yet it is not planned as a deliberate eirenicon for Protestants, but is an interpretation primarily for monks and secondarily for those Roman Catholics who want to understand them.

J. STAFFORD WRIGHT

Harry James Cargas, *Encountering Myself; Contemporary Christian Meditations*. SPCK, 1978, 127 pp, PB, £2.95.

Most of us are aware of the many books today on meditation and mysticism, including Christian meditation in itself and what can be learnt from Eastern sources. Nearly all dip deeply into the inner world of human experience. This book is almost entirely extrovert, except for occasional references to Jung, and consists of what we ought to do and how we should react in living the Christian life. Thus it resembles the usual talks on the BBC 'Thought for the Day'. This does not mean that the book is superficial, since the writer's feet are firmly on the ground. Whether he lives up to his title, *Encountering Myself*, I rather doubt.

J. STAFFORD WRIGHT

Derek Kidner, *Ezra and Nehemiah; Commentary*. Inter-Varsity Press, 1979, 174 pp, PB, £2.40.

No one would choose the Books of Ezra and Nehemiah for light reading, but those who are making a serious study of the Bible will find that these books need considerable guidance if they are to be followed intelligently. As one who has produced two heavyweight lectures on them, this reviewer has found this commentary wholly satisfying. Derek Kidner gives us an excellent running commentary, not distracted by the critical problems, which are kept for six appendices. Where some critics have torn the books apart, Kidner shows how simply the run of events can be kept together. Certainly this maintains the high standard of the Tyndale commentaries.

J. STAFFORD WRIGHT

Herman Dooyeweerd, *Roots of Western Culture: Pagan, Secular, and Christian Options*, Wedge Publishing Foundation, 229 College Street, Toronto, Canada M5T 1R4; 1979.

One may wonder how a book based on a series of brief articles published in an obscure journal in the Netherlands between the years 1945 and 1948 can be worth anything to the English speaking world of the 1980's. The problem seems especially acute when one finds that the articles were written to address a specific political problem important for the post-war development of Holland. One glance, however, at the title of the book and the name of its author makes us realize that our fears of irrelevance are unfounded. The genius of Herman Dooyeweerd's presuppositional stance is that it constantly seeks, even in its application to the smallest problems, to propound values and philosophical *grondmotieven* which are applicable for all times and all places. This book was written in the context of the struggle for the retention of pluriform democracy against the humanist manifesto of the Dutch National Movement in 1945, but it contains a useful summary of the entire structure of Dooyeweerd's political and social philosophy.

Dooyeweerd believes that "the development of western culture has been controlled by several religious ground motives" (p.9) and that these ground motives were introduced into the historical process chiefly by the ancients (Greece and Rome), Christianity and modern humanism. The four ground motives that he analyzes are: (1) the "form-matter" ground motive of Greek antiquity in alliance with the Roman idea of *imperium*; (2) the scriptural ground motive of Christianity centered in the concepts of creation, fall and redemption; (3) the Roman Catholic ground motive of "nature-grace" which attempts a synthesis of the first

two; and (4) the modern humanistic ground motive of "nature-freedom" which attempts a religious synthesis of the three previous motives concentrated in the value of human personality (pp. 15-16). Most of the book is taken up with an analysis of these four "ground motives", with the chief aim, of course, of defending the scriptural one.

Dooyeweerd is at his best when propounding the Dutch Calvinist view of the Christian antithesis and when making his critique of modern humanism. The chapters dealing with these subjects, in fact, outnumber those describing the ancients and Roman Catholicism by six chapters to two. Those familiar with the Dutch Calvinist school led by Groen van Prinsterer, Kuypers and Dooyeweerd will recognize the familiar categories of antithesis, sphere sovereignty and cultural disclosure among others, and here they are clearly explained and vigorously defended. The deficiencies of classical humanism and its development in the romanticism of the nineteenth century are also sharply pointed out. Readers whose appetites are whetted by this book will want to consult Dooyeweerd's larger work, *A New Critique of Theoretical Thought* (trans. by D.H. Freeman and H. DeJongste, Philadelphia: The Presbyterian and Reformed Publishing Co., 1953-58), but the discussion here is certainly thought provoking and comprehensive enough for introductory purposes.

While the arguments of the author are as incisive as ever, this book has several deficiencies. Firstly, it is too long. Not only should the last chapter have been dropped (or at least recast) to provide a better ending for the book, but the whole substance of the book would have been better served if it had been edited to half its present size. This is a sweeping essay about the fundamental bases of western culture; it should have been treated as such. It would then have retained more power and life; as it stands, it is too often repetitious and tedious and reads too much like the "learned academic discourse" (p.14) Dooyeweerd himself sought to avoid. Secondly, better translation would have helped the book's readability. A very common fault of translations of philosophical works is the attempt to retain direct linguistic equivalents to the author's philosophical terms in the translated language rather than to find suitable terms in the language into which one is translating. The term "ground motive" is a good example; why not "fundamental basis" (or something better)? Let the reader who wants to know Dooyeweerd's philosophical terms with more precision go to the Dutch sources; a popular book like this one apparently intended for the generalist, should concentrate on simple, readable English.

One other note in this regard is the irritating use of lower case letters in the spelling of "Christian" as an adjective;



every English dictionary I found uses capital letters, including the OED.

In spite of these criticisms, the translators and editors of this volume are to be praised for keeping this material in print. Combined with the fine analysis of Dooyeweerd by L. Kalsbeek (*Contours of a Christian Philosophy*, Toronto; Wedge Publishing Foundation, 1975, reviewed in this JOURNAL 1976, 103, (83-4)), *Roots of Western Culture* will serve as a good introduction to Dooyeweerd's work and, hopefully, will help to spread the insights of this great Dutch thinker to a wider audience than they have previously reached.

A.H. TROTTER, Jr  
Tyndale House, Cambridge

Donald MacKay, *Brains, Machines and Persons*, Collins, 1980, 111 pp, £4.50.

Few aspects of existence have been so debated as the workings of the human brain, yet fundamental questions remain unanswered. Is the brain a highly complex mechanism and nothing more, as the rest of the body seems to be? Or does it contain something which eludes us? Are its component parts, be they electrons, atoms, molecules or neurones, in some way radically different from those of other organs, so that they respond to the influence of will, emotions or creative thought? And where do 'I' come into the picture?

Professor MacKay bravely seeks to probe these questions. He writes as a Christian, well known for his publications and broadcasts on this and similar themes. But he thinks that his book should be of interest also to those who do not share his faith, since it is a scientific study based on facts available to every one.

The main purpose of his book is to sketch an alternative to the two well known but opposed views on the nature of man — *monism* and *dualism*. MacKay's theory, which he calls "Comprehensive Realism", is in accord with dualism in insisting that mental processes are every bit as 'real' as physical events and that our decisions really do determine actions. On the other hand it is in accord with monism in denying that we need to think of 'mind' and 'brain' as two kinds of interacting 'substances'. Mental events, and their correlated brain events, he suggests, are 'inside' (I) and 'outside' (O) aspects of one and the same sequence of events which have more to them than can be expressed in either mental or physical categories alone. (pp. 13-14).

In Chapter 2 MacKay turns to the "brain under the microscope". In the brain some 100,000 million cells are linked together electrically or electrochemically and they interact in ways which permit a vast number of interlinkages to be made. In this respect the brain resembles a modern computer. The memory capacity of its networks is capable, says MacKay, of storing a lifetime's knowledge, with still room to spare.

In Chapter 3 the question 'Is the brain a machine?' is posed once more. MacKay agrees, of course, that machines cannot think, feel or decide (pp. 54-55) and stresses that brains cannot do so either. Whether events that take place in the brain are purely mechanical or not he leaves as an open question.

In later chapters MacKay continues with the question: what distinguishes the brain from a machine? The solution, he says, is to be found within the two different approaches referred to, the 'I' story and the 'O' story.

If we look at the world from inside ourselves we conclude (correctly) that we are independent personalities, having control over our physical bodies and their surroundings; we are free agents, not automata. If we look from outside — the 'O' story — we conclude equally logically that the brain consists of ordinary atoms and molecules which obey all the laws of physics, and must therefore be a determinate mechanism. From this dichotomy MacKay derives an overall working philosophy in which the two view points are brought into harmony.

This approach is stimulating and offers new light on a bewildering problem. But will it satisfy every one? Some will feel that, despite all the arguments presented (p.86f), it fails to resolve the problem. This stands before us stark and clear: if the atoms and molecules of the brain obey the well known laws of physics, how *can* it respond to the controlling influence of a human mind? How can we be free to act, to choose, to trust, to make decisions?

What then can we say? Only that the brain still presents a mystery. Nevertheless, readers will benefit from this interesting study. Whichever way they respond they will be grateful to Professor MacKay for focussing attention once again on this profound and searching problem.

For so small a book the price, even by modern standards, seems inordinately high. However, it is well printed and attractively bound.

F.T. FARMER

INDEX TO VOLUME 107

*Abbreviations.* Asterisk (\*) - the first page of an article;  
c - correspondence; d - contributions to a discussion; f -  
and pages following; r - review; rw - writer of a review.

- abortion, 51r, 78  
 Ackroyd, P. 155  
 Africa, 153  
 AGM, 1, 63, 149  
 agriculture, 155  
 Albury Park, 104  
 alchemy, 144, 159  
 alcohol, 62  
 Alexander, 137  
 allergies, 20  
 altar, 7  
 Anderson, J.D.C. 51rw, 75rw, 157  
 animals. 74, 165  
 anthroposophy, 53  
 Antichrist, 98, 104f, 109, 138  
 Antiochus Epiphanes, 138  
 apes. Talking, 18  
 Arens, W. 20  
 armaments, 80  
 arrogance of humanism, 132\*  
 asbestos, 8  
 Ashby, E. 211  
 Asimov, I. 16  
 assertions, 34  
 asteroids, 152  
 astrology, 128  
 astronautics, 134, 228  
 atheism. New Scientist and,  
     12, 37  
 atom. Bomb, 69, 135; not used 163  
 atomic energy, 153  
 atoms, 142  
 Ayer, A.J. 34f  
  
 Babylon, 78  
 background radiation, 19  
 Bacon, Francis. 168f  
 Baker, M.C. 57rw, 60.  
     (Personality) 123\*  
 Barbour, I.G. 33  
 Barnes, G.E. 47rw; 213rw.  
     (Teleology) 114\*  
  
 Barrs, J. 53r  
 Barth, K. 23  
 Baxter, R. 112  
 Beierle, F.P. 20  
 Benedictines, 232r  
 Bible. Astronaut's 166  
     Translations (Newell) 185\*  
 bipedalism, 19  
 Blackstone, W.E. 112  
 blessed, 191  
 'blick', 38  
 blood. Sin &, 213  
 Boas, G. 89  
 Bockmuehl, K. 147r  
 Boff, L. 61r, 218r  
 Born, Max 181  
 brain. Evolution 19  
     Mind &, 235r  
 Braithwaite, R.B. 36  
 Brandt Commission, 80  
 Brethren, 109f  
 Bridgman, P.W. 180  
 Brillouin, L. 181  
 Buckland, W. 157  
 Buell, J.A. 54r  
 bullfighting, 163  
 Bultmann, 219  
 Burgess, D.A. (Paradigms) 167\*  
 Burgh, 110  
 Burt, Cyril. 76  
  
 Cain, D.E. 82d  
 Cairns, D.S. 61  
 Cameron, A. 68  
 Cameron, N.M. de S. 84d  
 cancer. Lung, 8  
 cannabis, 61  
 cannibalism, 20  
 capitalism, 146r  
 Capron, F.H. 82  
 carbon. CO<sub>2</sub>, 16  
 Cargas, H.J. 61, 232r

Casson, J.H. 218r  
 cause, 118f  
 censurers, 8  
 Chairman's report, 64  
 chemistry. Transcendental, 142r  
 children, 134. Beliefs of, 162;  
   play, 133; suffering, 218r  
   see infant.  
 China, 16, 228,  
   Alchemy, 160  
 Chomsky, N. 162  
 Christianity. Human face, 53r  
   circle of earth, 155  
   cities, 154  
   Cleaver, E. 81  
   Clever Hans, 18  
   Clines, D.J.A. 88  
   coal, 156  
   Cole, D. 152  
   competition, 72  
   computers. War &, 79  
   Comte, A. 142  
   Constantine, 91  
   conversion, 17  
   Copestake, D.R. 61  
   Cosgrove, M.P. 57r, 59r  
   cosmic radiation, 19  
   Coudert, A. 159r  
   creation, 90  
   creationism, 82f  
   Creator, 144r  
   Crete, 75  
   Crick, 81  
   Crown, The 164  
   crucified people, 93  
   cruelty, 14. Animals, 75  
   culture. Western, 233r  
   Cupitt, D. 61, 145r  
   crying, 158  
   cycles, 228  
  
 Dainton, F. 165  
 Daniel, 137fr. Empires, 97  
 Darby, J.N.  
 Darwinism, 214r, 228. Marxism &  
   72, 210; not central in  
   biology, 73  
 dating, 75, 83, 141.  
   Jesus' birth, 128\*  
  
 death, 9, 85, 89. Near, 70  
 delinquency, 79  
 deserts, 80  
 design, 181  
 Dilman, 88  
 dinosaurs, 20  
 Diprose, R. (Shroud) 91\*  
 Dirac, P.A.M. 77  
 discussion, 82f  
 dispensationalism, 109, 140  
 dolphins, 9  
 doomsday, 16  
 Dooyeweerd, H. 61, 216, 233r  
 Dornberger, W. 13  
 Dove, G. 55rw, 220rw  
 Drane, J. 48r  
 dying, 218r  
  
 Edmunds, V. 61r  
 education, 165  
 Ehrenfeld, D. 132r\*  
 Eire, 14  
 elephants, 75  
 Ellison, H.L. 213rw  
 erosion, 15  
 errata, 161  
 ethics, 9, 147rr  
 euphemism, 116, 135  
 evil, 61  
 evolution. Anti- 73; chemical,  
   143; v creation, 82f; man's,  
   19; muddle, 164; now stopped,  
   215; pollution &, 210f;  
   science &, 86  
 EXIT, 151  
 explanation. Biological, 114\*  
 eye for eye, 78  
  
 facts, 81  
 faith. chemical, 143  
 Faith and Thought, 6  
 faith healing, 61  
 Fall, 85, 89  
 famine, 81  
 Farley, J. 17  
 Farmer, F.T. 235rw  
 fear. Death, 70  
 feedback, 113, 205  
 Ferré, F. 28

- Feyerabend, P.K. 168f, 178f  
 Filmer, W.E. 129, 137r  
 (History Prophetic Interpretation) 97\*  
 fishing, 9  
 flatearth, 155  
 Flew, A. 35  
 food, 154  
 footprints, 20; 81  
 forests, 15, 80  
 Fort, C. 228  
 Francis, L. 162  
 Frey, W. 158  
 Fuller, D.P. 33
- Gadamer, 219  
 Gadegaard, N.H. 7  
 Gaia (see 102, 17) 228  
 gaps, 145  
 Gardner, Rex 51r  
 Geisler, N.K. 61  
 Genesis chap.1 f 82, 88f, 187f  
 genetics. Engineering, 166  
 Gladwin, J. 61  
 God. Experiencing, 123; Father, 78; -is 49r; male, 224; - talk (Luhman), 34\*  
 gold, 159  
 Goodall, S. 218  
 Gore, C. 48  
 Gorer, G. 70  
 Gosse, E. 83  
 Goudzwaard, R. 146r  
 Gould, D. 12  
 Gouldner, A. 205  
 Govett, R. 111  
 Grassé, P-P. 214r  
 gravity waves, 162  
 Greed, J.A. 137r  
 Greet, K. 151  
 Gregory, D. 44  
 Greven, P. 79  
 Gunning prize, 65  
 gunpowder, 228
- Habgood, J. 164  
 Hamburg. Battle, 225r
- Hare, R.M. 38  
 Harman, G. 83d  
 Harris, R.J.C. 8, 150  
 Harrison, R.K. 213r  
 Hayward, A. 49r  
 healing, 218r  
 heaven. Replacements, 134  
 Heidegger, 219  
 hell, 17  
 Hemer, C.J. (writing), 10\* (4 or 2 BC?) 128\*  
 hermeneutics, 219r  
 Herod the Great, 128f  
 Hesse, M. 181  
 Hick, J. 38, 84  
 Hitler, 228  
 Hoekema, A.A. 137r  
 hominids, 81  
 homosexuality, 226r  
 Hopkins, H.E. 223rw, 224rw  
 Houston, J. 144r  
 Hoyle, F. 17  
 human -ism, 132\*; -nature, 57, 59r; rights, 13  
 Hyder, O.Q. 54r
- Illich, I. 227  
 illusion of omnipotence, 124  
 immortality, 88, 140  
 induction, 168f  
 infant development, 123f  
 invention, 228  
 Isidore, 155  
 Islam, 137f, 157. Intolerance 13
- James, Wm. 127  
 Jeremiah, 17  
 Jesuits, 101  
 Jesus Godhead of, 54r; Gospels &, 48r; only way, 55r
- Kaufmann, U.M. 88  
 Kavka, G. 44  
 Kelly, L.G. 186  
 Kendall, J. 15  
 Kennedy, E.W. 229rw  
 Kibble, D.G. (Theology - a Science?) 23\*

Kidner, D. 61, 233r  
 Kirby, R. 52r  
 Kirk, J.A. 215r  
 Knight, D. 142r  
 knowledge. Value-free (Mackay) 202\*  
 Koestler, A. 19  
 Krasny, J. 62  
 Lavoisier, 142  
 Laycock, H.T. 83d, 86  
 Kropotkin, P. 10  
 Kuhn, T.S. 40f, 168f, 195f, 203  
 Kumar, S. 227r  
  
 Laing, R.D. 227  
 Lakatos, I. 168f, 173f  
 language, 227. Apes, 18, 162  
 Leith, J.H. 62, 229r  
 Leviticus, 213r  
 Lewis, C.S. 83  
 liberation theology, 56, 61, 217, 218  
 life. Abortion, 50r; rarity, 19; space origin? 17, 81  
 logical positivists, 34f  
 Louth, A. 187  
 love, 38  
 Lovejoy, A.O. 89  
 Lovelace, R.F. 62r, 222r  
 Lucas, R.C. 62  
 Luhman, R.S. (God-talk) 34\*  
 Luke, 62, 224  
 Luther. On alchemy, 160  
 Lyon, D. 147r, 148r  
 Lysenko, T.D. 17, 71  
  
 McAllister, W.T.B. 62  
 Macauley, R. 53r  
 McCrossen, V.A. 62  
 machines, 235  
 MACKAY, D.M. 60, 235r  
 (Knowledge) 202\*  
 magnetism. Earth's, 75  
 Maitland, S.R. 102  
 Mallory, J.D. 57r  
 man. Nature of, 145r; & nature, 210f  
 Mandeville, D.C. 148rw  
 Mandyllion, 68  
 Mark, 62  
  
 Marshall, I.H. 62  
 Martin, D. 185  
 Martin, E.L. 128r\*  
 Marxism, 18, 72  
 Mascall, E.L. 85, 224  
 materialism, 142  
 mathematics, 24  
 Maxwell, J. Clerk, 86  
 Medawar, P.B. 180  
 Mede, J. 104  
 meditations, 232  
 memory, 227  
 mental health, 57r  
 Middlebrook, M. 225r  
 millenium, 140  
 Miller, Wm. 108  
 Mills, A.A. 71  
 Milne, B. 223r  
 miracles, 12  
 Mitchell, B. 41f, 186  
 models, 30, 133f. Of man, 57  
 molybdenum, 81  
 Moncrieff, J.E. 59rw  
 Monod, J. 227  
 Morley, D. 47r  
 Morris, B. 185  
 Muller, M. 8  
 mysticism, 52r  
 myths, 228  
  
 nativity, 128r\*  
 nature. Spoilation, 80  
 neutrinos, 166  
 Newell, A.G. (Translations), 185\*  
 Newman, J.H. 106  
 Newton, Sir I. 75, 160  
 Nicholls, B.J. 62  
 Nielson, K. 45  
 nuclear weapons, 68, 151  
  
 occultism, 53  
 Offard, D. 79  
 oil, 156  
 Oparin, 18  
 Open University, 150  
  
 Papacy, 99  
 paradigms...in science (Burgess) 167\*, 195f  
 Paradise, 89

Partridge, A.C. 196  
 Paster, L. 17  
 Patrick, J. 80  
 Pearce, V. 81  
 perpetual motion, 87  
 personality development (Baker)  
   123\*  
 Pfunget, O. 18  
 Phillips, D.Z. 37  
 phosphine, 71  
 physics. Buddhist, 229  
 plutonium, 76  
 Polanyi, M. 29  
 Pollard, W.G. 13  
 pollution. Russia 210\*  
 Popes, 137  
 Popper, K. 33, 164, 167f  
 population, 153f  
 positron, 77  
 powders, 15  
 Powerscourt Conferences, 110f  
 poverty, 80, 154  
 Price, H.H. 43  
 Prickett, S. 197  
 Process Theology, 144  
 progress, 146  
 prophecy, 137fr, 152. Interpretation, history (Filmer), 97\*  
 providence, 12, 163  
 psychology of religion, 79  
 purpose, 117, 181  
  
 Quastler, H. 87  
  
 Ramsey, I. 17  
 rapture, 109f, 138, 140  
 Ravetz, J.R. 33  
 Rees, D. 232r  
 reformed tradition, 229r  
 reincarnation, 163  
 relativism, 224  
 relics, 92  
 religious wickedness, 14  
 renewal, 222r  
 restraining power, 98, 111  
 resurrections, 140  
 revolution. Theology &, 215rf  
 RI, 163  
 Robinson, J.A.T. 91  
 Roman Catholicism, Animals, 75  
  
 Rowdon, H.H. 112  
 Runcle, R. (A-bp) 151  
 Runner, H.E. 62  
 Russia. Pollution in, 210\*  
 Ryle, G. 182  
  
 sacrifice. In biology, 72  
 salvation. Search for, 55r  
 Sandeen, E.R. 112  
 Sargent, W. 17  
 Schmandt-Besserat, D. 10  
 Schofield Bible, 113  
 Schumacher, E.F. 227  
 science. Definition, 25;  
   dishonesty in, 76; philosophy  
   of, 167\*; presuppositions, 29f;  
   snobbery, 165  
 scientists. Cause arms race, 69;  
   ethics, 47; persecution of, 74;  
   sensitive, 47r  
 Scorer, C.G. 50r; 61r, 62, 218r  
 seeing - as, 39  
 seeing not believing, 77  
 Segré, W.E. 12  
 self. Sense of, 123  
 seven, 102  
 seventy weeks, 110  
 sex. Difficulties, 79; education,  
   81  
 shroud of Turin, 68, 91\*  
   Other shrouds, 94  
 small is beautiful, 227  
 Smart, N. 62  
 smoking, 8  
 social sciences, 133, 203f, 220r  
 Sookhdeo, P. 55r  
 space colonies, 134  
 spiritual techniques, 53; life,  
   222r  
 spontaneous generation, 17  
 Squire, A. 148r  
 Stockwood, M. 62  
 Stonehenge, 80  
 Storkey, A. 220r  
 Stott, J.R.W. 62  
 Strickland, 197  
 strontium, 143  
 struggle, 210  
 suicides, 70  
 Sullivan, D. 43

Symposiums, 67, 149  
 Teilhard de Chardin, 144  
 teleology, 73, (Barnes), 114\*  
 Terrace, H.S. 18  
 theology. A science (Kibble), 23\*  
 third world. Poverty, 80, 227  
 Thistelton, A.C. 219r  
 Thorpe, W.H. 78  
 time - records, 141r  
 Tintagel, 12  
 Todd, J.H. 104  
 Tol, A. 62  
 tolerance, 164  
 Torrance, T.F. 23\*  
 tourism, 165  
 Tractarians, 109  
 translations of Bible (Newell),  
 185\*  
 Trotter, A.H. 233rw  
 TV harm of, 19  
  
 values, 203f  
 verification, 37f, 44  
 VI constitution, 1;  
 new members, 66  
 visions, 81  
  
 Wald, G. 135  
 Walter, J.A. 215rwf  
  
 war. Computers stop, 79; Christ-  
 ianity &, 151; Hamburg, 225r  
 waste, 156  
 Webber, R.E. 62  
 Webster, J.B. 219rw  
 Wells, D.F. 55r  
 Wenham, J. 48rw, 49rw  
 whales, 135  
 White, R. 49rw  
 White, R.E.O. 147r  
 Wickramasinghe, C. 17  
 Wilcock, M. 224r  
 Williams, L.P. 180  
 Williams, N.P. 85  
 Willingale, A. 218rw, 224rw  
 will-o'-the-wisp, 71  
 Wilson, Ian. 68  
 Wilson, J. 82d  
 Winnicott, D. 123f  
 Wisdom, J. 35, 39  
 Wiseman, D.J. 78  
 Wittgenstein, 39, 219  
 wolf! wolf! 16  
 Wonderly, D. 141r, 161  
 world population, 81  
 Wright, J.S. 52, 53, 54, 55, 223,  
 232, 232, 233 (all rw)  
 writing. Origin, 10  
 year-day theory, 103  
 Zuckerman, Lord. 68



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# CONTENTS

EDITORIAL	149
NEWS AND VIEWS	
War — Ultimate weapon — World Population — Poverty, wealth and food — Circle of the Earth — Waste — Islam — Crying — Alchemy. (Errata)	151
SHORT NOTES	
Apes and Language — Gravity Waves — The 8-and the 16-year olds — Reincarnation? — Bullfighting Morality — Providence — The Evolution Muddle — Tolerance — Scientific Snobbery — Whither Education? — Tourism and Animals — Neutrinos — Genetic Engineering — Astronaut's Bible	162
ARTICLES	
David A. Burgess, Lecturer in Chemistry, Hammersmith and West London College of Further Education, <i>Paradigms, Programmes and Progress in Science.</i>	167
A. G. Newell, Sub-Librarian, University of Liverpool, <i>Modern Translations of the Bible and the Status of Language.</i>	185
Donald M. MacKay, Professor of Communication and Neuroscience, University of Keele, <i>'Value-free Knowledge' – Myth or Norm?</i>	202
ESSAY REVIEW	
Man and Nature in Russia — Boris Komarov's <i>The Destruction of Nature in Russia</i>	210
REVIEWS	
R. K. Harrison on <i>Leviticus</i> (reviewed by H. L. Ellison)	213
Grassé on <i>Evolution</i> (by G. E. Barnes)	214
J. A. Kirk on <i>Liberation Theology</i> (by J. A. Walter)	215
L. Boff on <i>Liberation Theology</i> (by A. Willingale)	218
C. M. F. pamphlets	218
A. C. Thistleton on <i>Hermeneutics</i> (by J. B. Webster)	219
A. Storkey on <i>A Christian Social Perspective</i> (by G. Dove)	220
R. Lovelace on <i>Spiritual Life</i> (by J. S. Wright)	222
B. Milne on <i>Christian Fellowship</i> and M. Wilcock on <i>St Luke's Gospel</i> (by H. E. Hopkins)	223,224
E. L. Mascall on <i>Christian Orthodoxy</i> (by A. Willingale)	224
M. Middlebrook on <i>The Battle of Hamburg</i>	225
D. Field on <i>Homosexuality</i>	226
Satish Kumar (ed), <i>The Schumacher Lectures</i>	227
J. H. Leith on <i>The Reformed Tradition</i> (by E. W. Kennedy)	229
D. Rees (ed) on <i>The Monastic Life</i> , H. J. Cargas, <i>Encountering Myself</i> and D. Kidner on <i>Ezra and Nehemiah</i> (by J. S. Wright)	232-3
H. Dooyeweerd on <i>Western Culture</i> (by A. H. Trotter)	233
D. MacKay on <i>Brains, Machines and Persons</i> (by F. T. Farmer)	235
INDEX TO VOLUME 107	237