

WHAT HAS CHRISTIAN THEOLOGY DONE WITH SCIENCE?

BY: R.S.C.F. Adelaide S.A.

In 1862 the Lancet published a series of articles headed "The Influence of Railway Travelling on Public Health". It was a report by a Commission formed to enquire into this then modern form of travel. The account opens with these words:

In the year 1825 there was, in the whole world, only one railway carriage, built to convey passengers. It ran on the first railway between Stockton and Darlington, and bore on its panels the motto

"Periculum privatum, publica utilitas".

The generation, which then was young, and now is old, has seen mighty changes such as it was never before given to one generation to witness.

The present age can boast even mightier changes. 1962 will soon be ushered in, exactly one hundred years after this article in Lancet was written. But these are the days of the astronaut, Wach 3, and electron microscopy. 1825 to 1862 saw the modernisation of the railway; 1925 to 1962 has witnessed the introduction of entirely new developments.

The growth of science can be likened to that of a snowball; today it is of almost unmanageable proportions. To carry this analogy a step further, popular opinion would suppose that the influence of Christian theology on Science is like applying a lighted watch to our snowball. The melting effect is thought to have been considerable, but the scientific snowball is too vast today, to be much affected by the small flame of Christian theology. In fact, as will be shown, the relationship between christian theology and science has undergone a transformation. Theology when the scientific snowball began to roll in earnest in the 17th Century, was the Queen of the Sciences.

In reality, the early Scientist, whether in Europe generally as in this country, were Christians and in many cases Clergy; they proclaimed that the Study of Nature was in itself a religious duty, and they challenged the old system of belief and education because it was concerned with dry - as - dust conventionalities instead of with the manifold and fascinating works of the living God.

C.E. Roven.

Science, Religion, and the Future.

Imagine a Scientific Rip Van Winkle F.R.S., who went to sleep 300 hundred years ago (The Royal Society was formed in 1663) waking up and visiting Cape Canaveral. His probable comment would be "A manned Rocket! Then with this we can get nearer to the Creator's heavens". Viewing a snow flake by means of a powerful microscope would doubtless provoke such a comment as, "To God be the Glory! How glorious are all His works."



Conflict between science and religion is a comparatively recent development. Singer, in his "Short History of Scientific Ideas to 1900" has perhaps put his finger on the crucial point.

It must be remembered that the Science of those days (here Singer is referring to Alexandrian era) differed from that of ours in that it had introduced no obvious and extensive amelioration of man's earth by lot. Nature had not been harnessed as we have harnessed her. Science was a way of looking at the world rather than a way of dealing with the world. And as a way of looking at the world - a way of life - positive knowledge, that is Science, was a failure. The world was a thing that men could neither enjoy, nor master, nor study. A new light was sought and found. In its glare the old wisdom became foolishness and the old foolishness wisdom. Weary of questioning, men embraced at last, and gladly, the promises of faith. The Faith that was immediately most successful was that which included within itself the experiences of the largest number of educated men. This was the Syncretic System known as Neoplatonism.

The Neoplatonists would have said that the universe had been made for Man, who is the essential reality; the stoic that Man has been made for the universe. The Neoplatonic view was victorian. It was not unacceptable to Christianity.

Neoplatonism was an outgrowth of the ancient philosophies of Greece. It was both a philosophy and a religion and in the 4th and 5th centuries was widely popular among the intellectuals. It left a permanent impress upon Christianity, partly through Augustine of Hippo, partly through its share in shaping Christian thought in general, and especially in its contribution to Christian mysticism.

Before tracing further the influence of Christian Theology on Science, it would be advisable to define the terms used and the limits of our subject. Science, as we have seen, has both changed in outlook and scope. But should not Christian Theology, by definition, remain unaltered? According to the Encyclopedia Britannica Christian Theology sets forth the contents and implications of the revelation in Christ. Such a definition raises a most important concept. Had Christians based their Faith on the New Testament writings only Christian Theology would probably never have come into conflict with Science at all. What irritates the scientific infidel is that Christ emphasized the inspiration of the old testament writings and the man that accepts Christ must accept this.

Is it possible to define what we mean by science? The word comes from the Latin Scientia which means knowledge. The final appeal is to observation. Science is a search for judgements to which universal assent may be obtained. It is a search that never ends and is never satisfied. The poigrancy of Scripture is one of the many reasons why the Christian accepts it as God's word for the Preacher says,

I the Preacher, was king over Israel in Jerusalem. And I applied my heart to seek and search out by wisdom concerning all that is done under the hearers this grievous occupation hath God given to the children of men to weary themselves therewith.

Eccles. 1 12-13.

and then again:

He hath made everything beautiful in its time; also he hath set the world in their heart, so that man findeth not out from the beginning to the end the work that God doeth.

Eccles. 3.11.

Bernard Ramm considers that the task of the scientist is to explore the works or creation of God, and that of the theologian the speech of God in the Bible, Nature and History. From the Christian perspective the true scientist should work in humility and reverence, believing that he is delving into the workshop of God. Such a view reminds us of Edison, who said in his quest for a satisfactory material out of which to make electric light filaments, "Somewhere in God Almighty's workshop is a dense woody growth, with Fibres almost geometrically parallel and with practically no pith, from which we can make the filament the world needs".

Science then is understanding nature; theology is understanding God. Can theology have any effect on Science as such? Is it not rather its effect on the Scientist and his attitude? The two subjects represent two entirely different disciplines if we assert that science is observation of (and in!) truth, whilst theology is revelation of truth. Ramm considers that the two tasks and the two bodies of conclusions should exist in a state of harmony. The speech of God in Nature and in Scripture must accord.

David would agree with Ramm when he said:

The heavens declare the glory of God; and the expanse sheweth the work of his hands. Day unto day uttereth speech, and night unto night sheweth knowledge. There is no speech and there are no words, yet their voice is heard. Their line is gone out through all the earth, and their language to the extremity of the world.

Psalms 19 1-4.

Any further attempt to define the terms theology and science would probably best be left to implication from the remainder of the material that is yet to be given.

Science began to appear, as an organised body of facts, about 300 B.C. Since our subject is Christian Theology and Science we can pass briefly over the first 3 centuries after the birth of science into the Alexandrian period.

This occupied the years 30 B.C. to A.D. 200 and is concerned largely the work of Ptolemy and Galen. At this time a formal declaration of Christian theology was not in existence, consequently there is no evidence of the science of that day being affected by what theology there was. However, personal conviction undoubtedly played an important part. To Ptolemy (c. A.D. 140) we owe the beginnings of cosmology and geography to Galen (c. 130 A.D.) anatomy and biology. Their work was outstanding, Galen's standing the test of over 1,000 years time, whilst Ptolemy's map of the habitable world is probably more accurate than the ideas of many schoolboys today, about the shape of Europe.

Ptolemy followed the Aristotelian tradition in his conception of the universe. Aristotle had considered that the earth was at the centre, whilst the heavenly bodies are arranged concentrically at different distances. Beyond all other is the sphere whose divine harmony causes the circular revolution of the whole celestial system. This was the view of Nature which held sway for 2,000 years. Aristotle taught that all mundane things are made up of four 'elements', earth, air, fire and water, which, in their turn, contain the four qualities, heat, cold, dryness, and moisture, in binary combination. This view prevailed until the 17th century and became a part of orthodox medieval theology. It fitted well with Christian, Jewish, and Moslem thought. The opposing view was that of Democritus (c. 470 - 400 B.C.) who taught that atoms are eternal, invisibly small and indivisible. Everything formed therefore passes away only to allow the atoms to rearrange themselves. Such a view was peculiarly abhorrent to the early and medieval church.

It has been claimed that Aristotelian views obstructed the progress of astronomy by divorcing terrestrial from celestial mechanics, for he adopted the principle that celestial motions were regulated by their own peculiar laws. He thus discouraged astronomical observation, placed the heavens beyond the possibility of experimental research. For two thousand years the general outline of the world as set first by Aristotle remained the orthodox view. The rigidity of the Aristotelian scheme lay not in itself but in the interpretation given to it, especially in the Middle Ages. By linking the theories of Aristotle with their own religious views, men of those times introduced a prejudgement into the debate concerning the validity of the Aristotelian scheme that had nothing to do with its philosophical or scientific value. So much for the moment of cosmology.

Galen, the great anatomist, was responsible for drawing up a scientific concept which lasted again, until the 17th century.

Singer writes:

What is the secret of the vitality of the Galenic biological conceptions? Galen was a teleologist. He believed that everything is made by God to a particular and determinate end (telos = 'end', 'aim'). Moreover Galen's teleology is of a kind which happened to fit in with the prevailing theological attitude of the Middle Ages, whether Christian, Moslem, or Jewish.

According to Galen everything which exists and displays activity in the human body was formed by an Intelligent Being as intelligible plan, so that the organ in structure and function is the result of that plan: "It was the Creator's infinite wisdom which selected the best means to attain His beneficent ends, and it is proof of "His omnipotence that He created every good thing according to His design, and thereby fulfilled His will". To know man you must therefore know God's will. This attitude removes the foundation of scientific curiosity. After Galen there is a thousand years of darkness, and both medicine and biology almost cease to have a history. Men were interested rather in the will and purpose of God than in natural phenomena.

That men should have had such an outlook for over 1,000 years is becoming perhaps less regrettable to the Christian today, when he considers the overall effect of scientific development.

The Dark Ages presented no coherent philosophical system, and men were capable of holding beliefs inconsistent with each other. The world was but God's footstool, and all its phenomena were far less worthy of study, than were the things of religion. In the view of many patristic writers the study of the stars was likely to lead to indifference to Him that sitteth above the heavens. This was the general attitude, particularly during the 4th and 5th centuries, set forth for instance by St. Augustine who speaks of "those imposters the mathematicians (i.e. astrologers) who use no sacrifice, nor pray to any spirit for their divinations, which arts Christians and true piety consistently rejects and condemns."

In the West, as has been implied, scientific Progress more-or-less ceased until the 13th century. It was not scientific stagnation however; during this period (c.850 - 1200) Islamic Science took over and was extremely productive. Although the question of the influence of Christian Theology does not arise here is is important that this rise of Science in the Orient should not be overlooked since the "scientific development" prior to the fruitful period from the 17th century onward, was the introduction of both Arabic and Greek ideas. This was due largely to translation work which took great forward strides at this time (1100 - 1450 A.D.). Christian theology did eventually exert its influence on Islamic Science, but only by the degree to which it affected its infiltration into the West.

Islamic Science saw the development of pure mathematics, including algebra. Arabic numerals came into use. In medicine great strides were made; Rhazes, the great moslem writer, was the first to distinguish between smallpox and measles. His treatise remains a medical classic. Many vegetable drugs were introduced and are still in use.

The view of the material universe conveyed by Arabic science to Latin Christendom was new in tone and presentation rather than in kind. The thought of the Latins in their Dark Age on material things was, Neoplatonic, with Aristotle's scheme and the theory of macrocosm and microcosm as keys. With the advent of Arabic thought, the outline of this vision was sharpened, and details were elaborated from the Arabian commentators on the Aristotelian corpus.

This was the age of the foundation of universities and of religious orders. Among these new orders were two that specially influenced the universities the Dominicans or Black Friars founded at Toulouse in 1215 by the austere Dominic (1170 - 1221), and the Franciscans or Grey Friars founded in 1209 by the Gentle Francis of Assisi. The Dominicans, as Domini cones, 'Rounds of the Lord', set themselves to strengthen true doctrine and extirpate error. The activity of the Inquisition was one of the less edifying interests of the 'hounds'. During the 13th century these two orders provided most of the great university teachers, who occupied themselves in marshalling the new knowledge and making it more accessible. Roger Bacon (1214-94) a much discussed figure in medieval scientific thought was a Franciscan who taught at Paris and Oxford. He was essentially an encyclopaedist, who realized better than most the urgent need for the enlargement of learning, especially in connection with accurate knowledge of languages and the collection and collation of scientific data. He made an appeal, verbose, diffuse, yet definite, for the encouragement of the experimental spirit. He was not himself an experimenter or mathematician, but saw that without experimentation and without mathematics, natural philosophy is but verbiage. He regarded the advancement of Science as important for the support of religion. He recognised the usefulness of natural knowledge, forecasting man's control of nature set forth more clearly, three and a half centuries later, by his great namesake Francis. He is the first to mention the use of lenses for spectacles and, perhaps, from hinting at the combination of lenses, can be regarded as the progenitor of optical apparatus.

Sir Thomas Aquinas (1227-74) was a Dominican. He remodelled the Aristotelian philosophy in accordance with the requirements of ecclesiastical doctrine. For example Aristotle conceived the stars as beings whose nature and substance were purer and nobler than that of ought in the spheres below. This was a point of departure from which the influence of the heavenly bodies over human destinies might be developed. With the advent of Arabian learning astrology had become, in fact, the central intellectual interest. It retained this position until the triumph of the experimental method in the 17th century.

As has been pointed out, the Aristotelian concept of the universe still held sway in the 13th century, it had been recognised and its significance strengthened by Thomas Aquinas on ecclesiastical grounds. In the 14th century Copernicus (1473-1543) introduced the idea that the earth was not the centre of the universe, but that the sun was, and that if one allows for the movement of the earth many mathematical difficulties could be explained. This Copernican view was at variance with the astrologers of the day, and with the theologians, since if the earth were removed from her central position among the spheres, the whole astrological system breaks down.

In 1584 there was published in London a book entitled "On the Infinite Universe and its Worlds". It was written by Giordano Bruno (1547-1600),

a native of Nola near Naples, and a renegade monk. Based on the Copernican System, Bruno suggested that not only did the earth move but that so too did the sun - and in fact did all the heavenly bodies. The universe was conceived as infinite. This differed entirely from the Christian philosophy. Bruno spoke of a 'common soul' within the whole which gave being to the universe. Christian philosophy demanded that the Creator should be infinite and apart from His finite creation. The universe of medieval Christian philosophy was necessarily centred in man, for into man alone among created mundane things, the Divine Spirit had entered. Small wonder that the Church was disturbed by Bruno's works. In 1600 he was burned at the stake. He died without a disciple which is a remarkable tribute to the power of the Christian view then. Yet much of his view was to soon displace medieval Christianity.

Galileo Galilei (1564-1642) made outstanding contributions to science, especially in astronomy. He was educated at a monastery. Contemporary with Galileo was Kepler (1571-1630), who was trained for the Christian ministry but turned to the study of astronomy. Both Galileo and Kepler accepted the Copernican view of the Solar System. Although these views were opposed by elements in the Roman Church many devout Christians accepted their ideas.

From Galileo's day onward science and measurement were inseparable, especially with regard to the concept of the universe. It was against this background that Rene Descartes (1596-1650) often hailed as the Father of modern philosophy, introduced his striking contributions to science. He was the first man in modern times to propound a unitary theory of the universe that became widely current.

According to Descartes the form of the world is inevitable, in the sense that had God created more worlds,

provided only that he had established certain laws of nature and had lent them His concurrence to act as is their want, to physical features of these worlds would inevitably form as they have done on ours.

Descartes regarded the universe as infinite and devoid of any empty space. He came to the conclusion that unless a man trusts in God he can never be certain that the world is as it seems to be.

Without Him (God), a man could not trust in anything, could not believe in a geometrical proposition, for He was the guarantee that everything was not an illusion, the senses not a complete hoax, and life not a mere nightmare.

The wisdom of Descartes' philosophy can be seen when the impenetrable barrier of death is considered, for example. Or to reflect on whether man might become one day the victim of a force beyond his control.



R.E.D. Clark writes in commencing on the philosophy of Aexartes:

Essential to science is the concept that the world is the same to all - it is not a haphazard integration of bizarre development.

The general belief in the unity of nature springs from the Christian view that one God made the universe. This concept can now be extended to take in both astronomical and atomic studies; throughout is declared the unity of the universe. The early Greek notion was that everything beyond the orb of the moon was of a different nature from that on earth.

Toward the end of the 17th century a group of men, with a deep interest in scientific method, began to hold meetings in Oxford. Amongst them were men of great stature such as Sir Christopher Wren (1632-1723), and Robert Boyle (1627-91). The upshot of this movement was the formation of the Royal Society - or to give it the full title "The Royal Society for Improving of Natural Knowledge by Experiment". One of its most important functions was the performance of experiments before the members.

Of the foundation members of the Royal Society 90% were either Puritans or closely allied in conviction. Scientists were spurred on by the sense that God had created nature; therefore the study of it would lead to an understanding of God. This was precisely the attitude of Galen toward the anatomical study of man; work which was seen to dominate scientific thinking for over 1000 years. To the scientist of the 17th century it would have been an insult to God for man not to have studied nature. For two centuries it was widely held that the chief aim of science was to provide argument for belief in God.

Robert Boyle, for example, was a busy natural philosopher though interested in theology. He learned Hebrew, Greek, and Syriac in order to study the Scriptures. Incidentally he spent large sums on Bible translation. He founded the Boyle Lectures, for proving the Christian religion against notorious infidels, viz., atheists, theists, pagans, Jews, and Mohommedans.

Wren, son of a clergyman, was responsible for many famous churches, being built to his specification besides St. Pauls. The debt that architecture owes to Wren is an enormous one.

The Reformation, which had swept over Europe and beyond, before the 17th century which has continued at an ever increasing pace down to our own day. For example not only did ignorant priests and narrow-minded theological faculties give an opinion on Galileo's findings, but even the pope (not however speaking ex cathedra) was willing to give a doctrinal decision on a scientific question. The movement of the earth was condemned by the 'Holy Office' as both contrary to Scripture and an absurd philosophy. But the Reformation had placed the Bible-- the book of nature -- into the hands of the common people. This had a great



liberating effect on scientific progress. Luther had sown the seeds of doubt as to papal infallibility, particularly in issues which could be decided on the basis of a sound experimental approach.

By the end of the 19th century the swing of the pendulum led the Rationalists to say that most of what could be learned had been discovered. Clerk-Maxwell, in 1871, speaking at Cambridge, spoke of the Christian attitude being:-

We have no right to think thus of the unsearchable riches of creation.

Science took on the character of an infinite quest, which still marks it today.

Sir David Brewster, President of the Royal Society at the beginning of the 19th century urged that Science should be taught in the schools so that a new generation, no longer ignorant of the wonders of Creation, would find it all but impossible to become atheistic in their thinking or immoral in their ways.

Pages could be filled showing the deep Christian Conviction of many - in fact most - of the budding scientists of this time. The five scientists, chosen as the most eminent of the 19th century by J.G. Crowther, were all men described as devout Christians: Davy, Faraday, Joule, Kelvin and Clerk-Maxwell.

Faraday, whose work was outstanding was an ardent Christian, an elder of the Sandemanian Sect, and a regular preacher. These men did not draw their science from the realm of Christian theology, as had their earlier scientific kingmen, but it was their deep faith in and knowledge of the Christian view (Clerk-Maxwell, a fervent Christian knew his bible almost by heart) which led them to study nature - which was to them God's glory displayed - with the same fervour. Surely they must have often thought of the worlds of Paul

Whatsoever ye do labour at it heartily, as doing it to the Lord, and not to men.

Col.3-23.

This more-or-less ends the era of 'Natural Theology'. A book, having this title written by W. Paley some years before the rise of evolutionary thought, set out the general theological and scientific view point of the day. To Paley nature was the sphere of almost unadulterated joy. Maladjustments in Nature, whilst having an appearance to do harm, were really incorrectly explained in those terms.

Naturalists seemed to react against this particular viewpoint rather violently. Romanes described the natural orders of things in the following rather awesome way:-

We find teeth and talons whetted for slaughter, hooks and tackers moulded for torment - everywhere a reign of terror hunger, sickness, with oozing blood and quivering limbs, with gasping breath and eyes of innocence that dimly close in deaths of cruel torture.

The influence of Christian Theology on the rise of evolutionary thought was it will be easily recognised, the greatest conflict to arise between science and religion. It is easy to understand this. A simple analogy may be seen in a child growing up. At first the child is almost unaware of its surroundings, but then begins the stage when everything is taken for granted. Then the "question bombardment" stage is reached, and finally the child begins to draw conclusions. So with Science, the final stage, in our analogy, has begun, conclusions have been drawn. The reason why Science and Christian theology has come into conflict of recent years is because the Scientist feels that he has raised questions to which the theologian cannot provide an adequate answer.

What appears to be inescapable is that where christianity has progressed the most, is where the early scientific strides were made.

It is evident that when theology has been invoked to explain scientific facts it has sometimes been a dismal failure. An example of this is the pre-formationist idea. It was finally exploded in 1768 by Walf. The theory was that since man has the 'seeds' of man inside him, the seed is identical - except in size - with the parent. Theologians gravely discussed it to explain 'original sin'. According to Swammerdam, if we were present inside our parents when they sinned, it followed that we being a part of them, must have sinned too. Baptism was thereby obviated; such a question was discussed but a satisfactory conclusion never given by the theologians. Swammerdam used Hebrews 7:9-10 as proof of preformation. Levi paid tithes before he was born and must therefore, have existed as a tiny fellow inside Abraham when the latter gave tithes to Melchisedek, King of Salem.

Such use of Scripture is not without its modern counterpart. It is well known that devout christians spoke against aviation (and still do!) Man was never intended to fly, otherwise he would have been given wings, was the kernel of the argument. As late as 1906 The times wrote:-

"All attempts at aviation are not only dangerous to human life but foredoomed to failure".

One of the writers of this paper was directed to Daniel 9:21, only a few years ago, as scriptural warrant for the principle of Flight being right for man:

"Whilst I was yet speaking in prayer, (says Daniel) the man Gabriel whom I had seen in the vision at the beginning, flying swiftly, touched me ....."

The stand made through Christian Theology against 'Darwinism' is well known in principle since in some scientific circles the struggle is still on. It has undoubtedly put Scientists on their best behaviour to produce sound evidence for their claims. But at the same time theologians have made some remarkable stride in proving the historical accuracy of Scripture. Sir Leornard Woolleys work, e.g. at Ur, and the Dead Sea Scrolls are recent examples of such advances.

There is little doubt that time has proved that Darwin's work - which was of course the embodiment of the scientific thinking of many outstanding men of the time e.g. Huxley - was open to criticism. However, it must also be admitted that it is not the basic concept of evolutionary change which is now questioned - have by a minority in the Christian world - but the mechanism remains largely

undecided. The burning theological question is clearly 'When did man first become responsible to God'? To the Scientist who admits of no God evolution - whatever the mechanism - is a comfortable theory, since if Nature is endued with power to organise itself into a complex world, it can by the same means acquire the ability to evolve the Christian Faith.

If Christian Theology is going to overthrow such a notion, it can only be as it proves itself to be what it began as, a revelation and not a Scientific proof.

There are several instances where scientific thought has been soft-pedalled for fear of furthering the cause of Christian Theology.

In Russia, for example, the genetic theory was opposed because it was felt that it would find too much support in Scripture. The fact that Wendell was a monk was one problem.

"These antiscientific views --- which in theory are a veiled form of clericalism - theological concepts of the origin of species as the result of individual acts of creation.

Zhdanov publicly apologised to Stalin for holding these views.

It is widely held amongst Scientists today that in certain instances Christian theology has hindered the course of Science. According to Hooykas.

Science is stultified wherever men cherish preconceived ideas which they refuse to submit to test.

Hooykas then goes on to say:

Scripture rightly approached has the effect of liberating the mind from all these constraints. Its power to inspire men has been shown through the ages, not only in the faithfulness of simple workman, but also in the boldness of thinking of the pioneers of Science.

However, the period following the Reformation provides some excellent examples of how the traditionalism of Protestant orthodoxy wished for a return to the Bible that was, to say the least, unprofitable.

The theologian G. Voetius (1588-1676), for example, was a great scholar, a protagonist of Science and learning, and a devout Christian. The reformed orthodoxy had found a certain fulfilment at the Synod of Dordrecht, in which the interpretation of the Scriptural doctrine laid down in the three confessions of the Reformed Churches had been accepted. There was nothing in them about novelties such as copernican astronomy. So he put forward a doctrine of inspiration, which would guarantee what he thought to be the orthodox position in these other questions also.

The apostles and evangelists, so he said, were taught languages and sciences by the Holy Spirit and, apart from that, their hand was guided so that they did not even need personal study, and yet wrote on scientific questions in an infallible manner. The consequence of this doctrine was a most imaginative exegesis, in which Scripture was read as if it were a statute of law. Psalm 19 spoke 'historically on the motion of the sun, otherwise it would not be the speech of heaven but that of ignorant people. The origin of the wind will never be known (writes Voetius) for Jesus said: "The wind bloweth where it listeth... but thou canst not tell whence it cometh, and whither it goeth."'

While such an approach to Scripture must now be regarded as narrow-minded there are few Christians today who would entirely reject Voetius' philosophy. Somehow we must reconcile the intolerance of such exegesis with, for example, Daniel's experience.

As for these four youths, God gave them knowledge and skill in all learning and wisdom; .... and in all matters of judicious wisdom as to which the king enquired of them, he found them ten times better than all the scribes and magicians that were in all his realm.

Daniel 1:17-20

Mosaic science was an attempt to establish a Christian philosophy and a Christian science on biblical data alone; to borrow nothing from the heathen. It arose shortly after the Reformation but did not influence any noteworthy scientist.

Calvin was a Christian of deep conviction; he realised, as perhaps nobody before him, the discrepancy between the far from naive astronomy of the 16th century and the world picture of biblical times. Yet, in spite of his reverence for scripture he did not reject the astronomy of his day. To Calvin differences arose because Moses wrote in a popular style; he only described what all ordinary persons endued with commonsense are able to understand, whereas the astronomers investigate whatever the ingenuity of the human mind can comprehend.

The dominant idea in Calvin's thinking on the subject is the protestant doctrine of the general intelligibility of Scripture which is a revelation not only to a privileged class of scholars, but to all people. Calvin holds that God wished all people of all ages to understand His revelation and therefore accommodated Himself to us. This seems to be a remarkably balanced view and surely one which should commend itself to Christians today.

Philips van Lansbergen (1561-1632) said:

Scripture is given by inspiration of God, and is profitable for doctrine, for reproof, for correction, for instruction in righteousness (2 Tim. 3:16) but it is not meet for instruction in geometry and astronomy; the circumference of the circle

may be learnt from Archimedes and not from Scripture, which often makes an approximate rather than an exact use of numbers, e.g. 1 Kings 7:23 - And he made a molten sea, ten cubits from the one brim to the other: it was round all about, and his height was five cubits: and a line of thirty cubits did compass it round about.

Augustine of Hippo, in the 4th century, had urged Christians to take into account the best views of science in making his interpretations; for, he says:

If a Christian ignores what can be learnt by means of the senses, and as a result teaches foolish doctrines about Nature, he can hardly expect unbelievers to listen to what he has to say about spiritual matters, when in matters about which they have knowledge he makes himself an object of ridicule.

For if perchance the opinion we have adopted should afterwards turn out to be false, our faith should fall with it; and we should be found contending not so much for doctrine of the sacred Scriptures as for our own; endeavouring to make our doctrine to be that of the Scriptures, instead of taking the doctrine of the Scriptures to be ours.

Augustine's words are surely most relevant today.

The doctrine of spontaneous generation is a very striking example of how theologians have hindered the progress of science. In the early ages Christians saw clearly enough that if pagans insisted on making slime the cause of all things there was no room for a Creator - God. St. Gregory did great service by urging on these grounds that spontaneous generation must be false. But the theory did not die so easily as that.

It is felt that had spontaneous generation not been so difficult to oust, aseptic surgery would have been introduced very shortly after Harvey had explained the circulation. In fact, aseptic surgery had to await the genius of Lister. In passing it might be noticed that Lister was a most devout Christian, brought up as a strict Quaker. He too can take his place amongst the scientists of whom it can be said,

All these died in faith  
Heb. 11:13

Finally, a word should be added on moral responsibility and the effect of Christian theology.

According to Ramm:

If it is the intent of science to amass all the facts about the universe in its countless facets it is the function of theology to give these data their purpose and teleological ordering. Through revelation we know that this great system we call the universe (in all its levels from the physical to the psychical and the atomic to the astronomical) is from God. From the same book of revelation we know its divinely appointed function and purpose. Without theology science sets forth the vast universal scheme as blind, meaningless, purposeless, never knowing an hour of creation, never knowing an hour of consummation, and in the perspective of an infinity of years and an immensity of space our human hopes, joys, tragedies, aspirations, civilizations, intellectual and artistic achievements are meaningless, insignificant, and trivial. The humanist who tries to put a little colour and thrill back into human existence while still believing in a universe that is inhuman and meaningless and impersonal - cannot but sound either cheap or ironical.

With the advances that have been made of recent years, especially, in harnessing Nature's power, it is only too evident that science needs moral safeguards. Theology should supply this. As science emerges in its great quest for truth, as it breaks free of the trammels of mysticism, intolerance and the mere pursuit of fame the words of Christ surely becoming relevant to this very situation:

Ye shall know the truth and the truth shall set you free

John 8:32

What is perhaps the strongest point the theologian can make as a contribution to science is to point out the purpose of God in Creation. Christian theology itself is sometimes content to go no further than the scientist, and discuss what is presently seen in the world around. The real power of Christian theology lies in being able to draw, from the 'lesson book of Nature' moral teaching. Paul says,

Because what is known of God is manifest among them, for God has manifested it to them - for from the world's creation the invisible things of him are perceived, being apprehended by the wind through the things that are made, both his eternal power and divinity - so as to render them inexcusable.

Rom. 1:19-20

How often our Lord used simple illustrations from Nature to draw attention to a deep spiritual principle.

Observe with attention the lilies of the field, how they grow: they toil not, neither do they spin; but I say unto you, that not even Solomon in all his glory was clothed as one of these. But if God so clothe the herbage of the field, which is today, and tomorrow is cast into the oven, will he not much rather you, O ye of little faith?

Matt. 6:28-30

Perhaps the most fitting way to end this subject is to quote again from the Encyclopaedia Britannica, from the section on Science:

Science can treat the world solely on its own level; that is the level of phenomena (things that appear). The quieting of our minds when science yields contradictory results is ultimately a task of philosophy, or religion, or both. Science, as such, can have only an indirect share in this.

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#### LIST OF BOOKS REFERRED TO

|   |               |
|---|---------------|
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| Science, Religion, and the Future                                       | C.E. Raven    |
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| Christian Belief and Science  | R.E.D. Clarke |
| The Universe: Plan or Accident?   | R.E.D. Clarke |
| Christian Faith and the Freedom of Science                              | R. Hooykaas   |
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| The Report on "The Influence of Railway Travelling<br>on Public Health" |               |
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