

MONDAY, AUGUST 17

- 7:30-8:15 AM Breakfast
8:30 AM Group devotions (120-121 McInnis Hall)
9:00 AM Plenary Session (Auditorium) "Will the Universe End With a Bang or a Whimper?," *Owen Gingerich, Harvard University, Cambridge, Massachusetts*
10:00 AM Break

Parallel Session A—Astronomy and the Bible (120-121 McInnis Hall)

- 10:15 AM "Time Dilation and Genesis," *D.W. Kupke, The University of Virginia, Charlottesville, Virginia*
10:45 AM "On the Nature of the Star of the Magi," *Sherman P. Kanagy, II, Illinois State University, Normal, Illinois*
11:15 AM "Astronomically Dating the Book of Revelation," *Allen H. Bilderback, Puyallup, Washington*
11:45 AM "The Heavens Declare the Glory of God," (painting presentation), *Sandra Bowden, Clifton Park, New York*

Parallel Session B—Origins I (101-102, McInnis Hall)

- 10:15 AM "Calvin, Creation, and Natural Science," *Edward B. Davis, Indiana University, Bloomington, Indiana*
10:45 AM "The Bishop vs. the Bulldog: Reconstructing the Wilberforce-Huxley Debate on Darwin's Origin of Species," *W. Paul Fayter, Toronto, Canada*
11:15 AM "Dr. James Houston's Views on Creation," *Paul T. Arveson*
12:15-1:00 Lunch

Parallel Session A

(120-121), McInnis Hall)

- 1:30 PM "Divination in the Ancient World," *Edwin Yamauchi, Miami University, Oxford, Ohio*
2:00 PM "A Christian Social-Scientist's Response to Humanism," *Bruce G. Nilson, Middletown, Pennsylvania*
2:30 PM Break
3:00 PM "An Explanation of Remote Viewing and Other Psychic Phenomena," *Adrian V. Clark, Toney, Alabama*

Parallel Session B—Origins II

(101-102, McInnis Hall)

- 1:30 PM "Presentation of Scattered Evidence for New Mechanisms of Biological Advance," *Robert F. DeHaan, Philadelphia, Pennsylvania*
2:00 PM Examinations of Various Interrelationships Between the New Mechanisms and the Biblical Record," *Robert F. DeHaan, Philadelphia, Pennsylvania*
2:30 PM Break
3:00 PM "The Biblical Firmament: Vault or Vapor?," (45 min. slide presentation) *Robert C. Newman, Biblical Theological Seminary, Hatfield, Pennsylvania*
5:30-6:15 Supper



Information about the American Scientific Affiliation can be obtained at the literature table at the meeting or by writing the National Office at:

American Scientific Affiliation
P.O. Box J
Ipswich, Massachusetts 01938

Official Program

THIRTY-SIXTH ANNUAL MEETING

of the

**AMERICAN
SCIENTIFIC
AFFILIATION**

(Incorporated)

August 14-17, 1981

EASTERN COLLEGE
St. Davids, Pennsylvania

OFFICIAL PROGRAM

Thirty-sixth Annual Meeting of the ASA
Theme: The Heavens Declare the Glory of God
August 14-17, 1981
Eastern College, St. Davids, PA

FRIDAY, AUGUST 14

- 4:00-6:00 PM Registration (continuing throughout conference)
McInnis Hall Foyer
- 6:00-7:00 PM Supper
- 7:30 PM Opening Session (McInnis Hall Auditorium)
Chairman—*Robert L. Herrmann, President of ASA*
Welcome—*Frank Roberts, Chairman, Delaware Valley Local Section*
Announcements—*Harry J. Lubansky*
Introduction—*Gerald D. Hess, Chairman, Annual Meeting Program Committee*
Opening Address: "The Galileo Affair in Contemporary Perspective" *Owen Gingerich, Harvard University, Cambridge, Massachusetts*
- 9:00 PM Refreshments (Walton Hall) or Swimming (Gym, 9:00-10:00)

SATURDAY, AUGUST 15

- 7:30-8:15 AM Breakfast
- 8:30 Group Devotions (Room 120-121, McInnis Hall)
- 9:00 Plenary Session—Symposium: Theological and Scientific Explorations of Space (Auditorium) Chair: *Kyle Cudworth, Yerkes Laboratories, Univ. of Chicago*
- 9:00 AM "Creation, Incarnation and the Problem of Extraterrestrial Life in 19th Century British Natural Theology," *W. Paul Fayter, Univ. of Toronto, Toronto, Ontario*
- 9:30 AM "The Reliability of Astronomical Distances," *Kyle Cudworth, University of Chicago, Chicago, Illinois*
- 10:00 AM Break
- 10:30 AM "Ancient Astronomy and Paul, Peter and Jude," *E.R. Woodside, Pasadena, California*
- 11:00 AM "A 15.7 Light-Year Universe?," *Perry G. Phillips, Telford, Pennsylvania*
- 12:15-1:00 PM Lunch

Parallel Session A—Christianity and the Social and Behavioral Sciences

(120-121 McInnis Hall)

- 1:30 PM "Fear of Psychology Among Evangelicals," *Rodney L. Bassett, et. al., Roberts Wesleyan College, Rochester, New York*
- 2:00 PM "Death, Dying, the Fear of Death and Beliefs Concerning the End of the World," *John M. Vayhinger, Anderson School of Theology, Anderson, Indiana*
- 2:30 PM Break
- 3:00 PM "Drifting Along With Cultural Change," *Robert C. Loomis, Superior, Wisconsin*
- 3:30 PM "Christianity, Sociology and the Moral Order," *Charles P.C. Flynn, Miami University, Oxford, Ohio*

Parallel Session B—Philosophy of Science

(101-102 McInnis Hall)

- 1:30 PM "The Open-Endedness of Scientific Truth," *W. Jim Neidhardt, New Jersey Institute of Technology, Newark, New Jersey*
- 2:00 PM "Mathematical Philosophy," *Robert A. Herrmann, U.S. Naval Academy, Annapolis, Maryland*
- 2:30 PM Break
- 3:00 PM "The Scientist and Present-Day Philosophy," *Mary Carmen Rose, Goucher College, Baltimore, Maryland*
- 3:30 PM "Integrative Approaches for Science and Christianity: Complementarity," *John W. Haas, Jr., Gordon College, Wenham, Massachusetts*

NATIONAL BUSINESS MEETING OF THE ASA

- 4:00 PM Everyone invited to Annual Business Meeting

ANNUAL BANQUET

- 6:30 PM Dinner (Walton Dining Room)
- 7:30 PM Presidential Address—*Robert L. Herrmann, Gordon College, Wenham, Massachusetts* "Recreation for ASA Members: Walking the Secular Fences and Fishing the Gene Pools."

SUNDAY, AUGUST 16

- 8:00-8:45 AM Breakfast
- 9:00 Bible Study (Room 120-121 McInnis Hall)
- 10:00 AM Worship in local churches
- 12:15-1:15 PM Dinner

Parallel Session A—Christianity and Science—Current Issues

(room 120-121, McInnis Hall)

- 1:30 PM "Proposal for a Popular Publication on Science and Faith," *Walter R. Hearn, New College, Berkeley, California*
- 2:00 PM "Recombinant DNA Research: How To Do It and What the Future Holds," *Russell R. Camp, Gordon College, Wenham, Massachusetts*
- 2:30 PM "Human Industry, Environmental Pollution and the 2nd Law," *David L. Swift, John Hopkins University, Baltimore, Maryland*
- 3:00 PM "Do Mutations Provide the 'Raw Material' of Evolutionary Advance? A Review of Research," *Robert F. DeHann, Philadelphia, Pennsylvania*

Parallel Session B—Theology, History of Science

(Room 101-102, McInnis Hall)

- 1:30 PM "Science of Reformation," *Harold Harzler, Mankato, Minnesota*
- 2:00 PM "Fall of Man: Historical and Psychiatric Perspective," *Walter C. Johnson, Hanover, Massachusetts*
- 2:30 PM "Is Newton In Heaven?," *Helen Martin, West Grove, Pennsylvania*
- 3:00 PM "Comparative Religion: A Scientific Look," *G. Arthur Mihram, Princeton, New Jersey*

- 4:00-6:00 PM Interest Groups: Topics, Locations and leaders to be announced.
- 6:15-6:45 PM Supper
- 7:30 PM Plenary Session (Auditorium) "Is There Life on Other Worlds?," *Owen Gingerich, Harvard University, Cambridge, Massachusetts*

W. Zair

**ABSTRACTS OF PAPERS TO BE PRESENTED
AT THE 1981 ANNUAL MEETING OF THE ASA
AUGUST 14-17, 1981**

DR. JAMES HOUSTON'S VIEWS ON CREATION
Paul T. Arveson, Silver Spring, MD 20902

Dr. James Houston, founder of Regent College, Vancouver, has recently published a book, I Believe in the Creator (Eerdmans, 1980) that has already been widely quoted in the Journal ASA and elsewhere. In 1980 Dr. Houston delivered a series of lectures entitled "The Eclipse of the Creator," a commentary on 20th century culture.

In the book and the lecture series, Dr. Houston offers a refreshingly different alternative concerning the creation/evolution issue that will be of interest to many in ASA. It is a spiritual and biblical perspective that places the emphasis on the Creator Himself rather than the creation.

The format for this lecture will include an audio-visual show in which excerpts from Dr. Houston's lectures will be given. This is a pictorial commentary, not a critique. The audience will be given an opportunity to comment on Dr. Houston's statements after the conclusion of the audio-visual show.

**FEAR OF PSYCHOLOGY AMONG EVANGELICALS:
EMPIRICALLY EXPLORING THE PROBLEM**
Rodney L. Bassett, Julia Pecnik, Barbara Rose;
Roberts Wesleyan College, Rochester, NY 14624

One barrier to the integration of psychology and Christianity may be a fear of psychology among conservative Christians. If such a fear exists, there could be a variety of causes including: psychology "trespassing" upon the traditional territory of the Church, the frequent identification of liberal Christianity with the social sciences, and the apparent hostility of some psychologists toward Christianity. Our study attempted to assess objectively the extent and nature of such fear. The method involved administering a survey to four groups of Christians: advanced and introductory psychology students at a Christian liberal arts college, and adult Sunday School classes at urban and rural evangelical churches. Participants reported their overall reaction to psychology, relative to other disciplines, as well as the existence of any particular fears of psychology. Overall, the results revealed interesting patterns of fear and acceptance of psychology among evangelicals.

ASTRONOMICALLY DATING THE BOOK OF REVELATION
Allen H. Bilderback, Puyallup, WA 98371

Zechariah was the first biblical writer to describe heavenly planets as horsemen (1:8) that rode across the sky. John the Revelator used the same symbolism but added the symbolism of the constellations through which the planets were passing (6:1-8). By using

planetary tables I determined that the planets were in the relative positions as John described them only on November 4, 96 AD with a plus or minus ten days. Thus this was the date of the vision of Revelation Chapter 6.

Shipping on the Mediterranean Sea was normally closed from late September (Acts 27:9-12) until March. Tradition declares that John stayed 18 months on Patmos. Thus John must have arrived on Patmos about September 95 AD and left about March 97 AD. Domitian was murdered on September 18, 96 AD but the news of his death probably reached Patmos when the quarry ships returned in the spring. John was then released and probably finished his writing at Ephesus shortly after March 97 AD.

This hypothesis is a fruitful one. It not only confirms the true identity of the Four Horsemen but it helps us astronomically date the Book of Revelation. It also gives us the key to identify the ten kings (17:12) and for dating 18 of the 22 chapters in this book. But the latter tasks are beyond the scope of this limited presentation.

RECOMBINANT DNA RESEARCH: HOW TO DO IT AND WHAT THE FUTURE HOLDS

Russell R. Camp, Gordon College, Wenham, MA 01984

We are in the midst of a biological revolution caused by rapid advances in recombinant DNA technology. One is impressed with the precision and confidence with which biologists can now manipulate genes. Gene splicing is perhaps the most powerful and awesome skill acquired by humans since the splitting of the atom.

A commonly employed recombinant DNA technique involves the introduction of a gene from a higher organism into bacteria in such a way that a gene product (a protein) is produced that has therapeutic value. One method to get bacteria to produce insulin involves the following steps: (1) Cut insulin gene from human DNA with appropriate restriction enzyme, (2) cut circular bacterial plasmid DNA molecules at one point with same restriction enzyme, (3) mix insulin gene with plasmid DNA and allow insulin gene to join with plasmid DNA forming a circular recombinant DNA molecule, (4) insert recombinant molecules into bacteria, (5) allow bacteria to replicate and express the insulin gene, (6) concentrate the gene product (insulin) for future therapeutic use.

Scientific advances made possible by the development of a sophisticated methodology in the recombinant DNA field will continue to touch each of our lives. Applications include: (1) programming bacteria to produce molecules of therapeutic importance such as insulin, growth hormones, interferon, and proteins to facilitate the inexpensive and safe production of vaccines to protect humans and domestic animals from pathogenic organisms, (2) cloning and sequencing genes to better understand the nature of gene regulation during cell differentiation (Baxter, chairman of the First Annual Congress for Recombinant DNA Research, said this task is "the biggest challenge since the discovery of the double helix," (3) direct gene therapy of plants to improve crop yields with minimal fertilizer use, (4) direct gene therapy in humans and domestic animals to correct genetics defects and improve the overall quality of life.

AN EXPLANATION OF REMOTE VIEWING AND OTHER PSYCHIC PHENOMENA

Adrian V. Clark, Toney, AL 35773

This concept is based upon John A. Wheeler's theory of superspace and theories on how the brain functions. It has been formulated to agree with data from remote

viewing and other parapsychology experiments which indicate that undetected signals travel from viewer to remote viewer and from target to remote viewer. The theory is that space, as defined by Einstein and Wheeler, has a dynamic, energetic characteristic which is perturbed by any event. The perturbation propagates along a path, which is not the path of the photon in 3 geometry, and the perturbation produces a minute fluctuation in the dynamic vacuum field around objects. The perturbation has the greatest affect on objects similar to the one producing the event. This concept also proposes that the event of a synapse emitting an ion produces a perturbation in superspace which is detected by another synapse as a field change in the synaptic cleft which biases the synapse to emit or retain ions.

THE RELIABILITY OF ASTRONOMICAL DISTANCES

Kyle Cudworth, Univ. of Chicago, Yerkes Observatory, Williams Bay, WI 53191

The large distances of astronomical objects have often been used as evidence of the large age of the universe. This is based on the finite speed of light and the observation that even the nearest large galaxies are more than a million light years from us. Young-earth creationists have presented various arguments against large distances and have sometimes implied that these are merely guesses. This paper will review the basic methods of determining astronomical distances with particular attention to recent work that significantly strengthens the case for large distances.

The most fundamental distance measurements for nearby stars are geometric. In recent years our accuracy in such measurements has increased greatly. At larger distances we depend upon "standard candle" methods. One recognizes a faint object which appears to be intrinsically identical with a brighter object of known distance. The difference in brightness is then assumed to be due to the great distance of the faint object. At very large distances one makes use of the very strong correlation between radial velocity and "standard candle" distances of galaxies.

One can argue against large distances only by making very ad hoc assumptions for which there is essentially no scientific evidence.

CALVIN, CREATION, AND NATURAL SCIENCE

Edward B. Davis, Indiana University, Bloomington, IN 47405

The name of John Calvin is most readily associated with carefully formulated and starkly articulated positions on such theological issues as predestination, total depravity, and the sovereignty of God. At the same time, the creation orientation so fundamental to his thinking is often forgotten and his constructive attitude toward science is frequently overlooked. Closer examination reveals that Calvin devoted considerable thought to such issues as God's immanent working in His creation, the proper role of natural theology, and the interplay of natural philosophy and Holy Scripture.

DO MUTATIONS PROVIDE THE "RAW MATERIAL" OF EVOLUTIONARY ADVANCE: A REVIEW OF RESEARCH

Robert F. DeHaan, Philadelphia, PA 19138

Evolutionary theorists have concluded that small, new mutations that are favorable to their carriers provide the variability for functioning of natural selection. Selected research purported to confirm this conclusion will be critically reviewed.

**PRESENTATION OF SCATTERED EVIDENCE FOR NEW MECHANISMS OF
BIOLOGICAL ADVANCE**

Robert F. DeHaan, Philadelphia, PA 19138

Growth, development, and learning characterize the biological advance of species. Evidence for the concept of "species growth" will be presented. The function of internal electrical, electromagnetic, and magnetic forces in growth and morphology will be considered. Implications will be discussed.

**EXAMINATIONS OF VARIOUS INTERRELATIONSHIPS BETWEEN THE NEW
MECHANISMS AND THE BIBLICAL RECORD**

Robert F. DeHaan, Philadelphia, PA 19138

The biblical record will be examined in order to ascertain the "goodness of fit" between it and the new mechanisms of biological advance.

**CREATION, INCARNATION AND THE PROBLEM OF EXTRATERRESTRIAL
LIFE IN NINETEENTH-CENTURY BRITISH NATURAL THEOLOGY**

W. Paul Fayter, Toronto, Ontario, Canada

We believe in one God, the Father almighty,
maker of heaven and earth...
And in one Lord Jesus Christ,
the only-begotten Son of God,
Begotten of his Father before all worlds...
—the Nicene Creed

The writer of Ps. 8:3-4 did not need modern astronomers to teach him about apparent cosmic insignificance. The doctrine of Creation can never be threatened by scientific insights, for it is not a scientific cosmogony. It is a confession of faith in the One who expresses himself as Creator and Sustainer of the universe. The doctrine of Providence asserts that God is Lord not only of nature but of human history, and wills the fulfillment of all creation. The doctrines of Incarnation and Redemption directly follow (e.g. Eph. 1:3-10; Col.1:15-20). God is fully and uniquely disclosed in the historical person of Jesus Christ, and we are the special recipients of providential care and atoning love.

Would a plurality of inhabited worlds, or a multiplicity of divine Incarnations endanger traditional beliefs concerning God, Christ, nature and man? Such questions are many centuries old. We have not finished wrestling with them in the late 20th century.

Among eminent scientists and theologians in 19th-century Britain the orthodox view was in favor of plurality. Besides biblical proof-texts, and inferences and analogies drawn from astronomical observations and nebular hypotheses, arguments for plurality were rooted in such metaphysical, natural theological, and biological concepts as uniformity of natural law, plenitude of divine power, purpose, design, and adaptation.

Against a long tradition, Cambridge mathematician-philosopher Rev. William Whewell in the 1850s sparked a controversy by attacking the scientific foundations of pluralist

thought. Claiming it was impossible to imagine intelligent nonhuman moral agents, he argued that since humans can survive only in a narrowly prescribed environment, and since the requisite conditions are not met elsewhere in the universe, no significant extraterrestrial life existed. Whewell's detailed thesis involved the re-evaluation and reinterpretation of some basic principles of natural theology. Pluralists believed that God would not have made millions of stars and planets "in vain" (i.e. without inhabitants). Whewell marshalled biological and geological evidence to suggest that such "waste" was in fact a common feature of creation.

I think Whewell interpreted claims for humanlike life in outer space as a scientific challenge to his religious understanding of man's privileged place in nature. In order to preserve human singularity and worthiness, Whewell believed he had not only to deny the existence of extraterrestrial life, but to reject naturalistic theories of the origin and development of life on Earth as well. So great was the impact of his almost-forgotten critique that much of it has been unconsciously incorporated into modern exobiology.

THE BISHOP VS. THE BULLDOG: RECONSTRUCTING THE WILBERFORCE-HUXLEY DEBATE ON DARWIN'S ORIGIN OF SPECIES

W. Paul Fayter, Toronto, Ontario, Canada

The celebrated confrontation between Bishop Samuel Wilberforce and Thomas Henry Huxley during the June 1860 meeting of the British Association for the Advancement of Science in Oxford has come to symbolize the 19th-century polarization of Christianity and science. The Bishop's sarcastic question to Darwin's "Bulldog" about whether it was through his grandmother or grandfather that he claimed descent from a monkey allowed Huxley to assume a superior moral stance and retort that he would rather have had an ape for an ancestor than a man who used his gifts in the interests of obscurantism. This response has served to epitomize nothing less than the triumph of scientific truth over religious prejudice.

This interpretation is historically erroneous. It naively assumes a warfare model of science-religion interactions, and it wrongly concludes that the confrontation was a paradigmatic episode in that conflict.

The high drama of the event has diverted attention away from the fact that Wilberforce's critique of Darwinian evolutionary theory raised quite legitimate scientific, methodological, conceptual and theological objections. It has also obscured the fact that Huxley publically acknowledged basic technical problems with Darwin's work.

What actually took place in Oxford in 1860 is difficult to know. It is not commonly realized that no formal debate between Huxley and Wilberforce occurred, and no verbatim record of their remarks exists. (Curiously, the B.A.A.S. Report for that year includes no summaries of the addresses by either man, nor does it even mention that such addresses were ever delivered.) First- and second-hand reports of the affair are neither complete nor consistent.

We are not reduced to speculation, however. There is the careful comparison of contemporary accounts, for one thing. Further, we can know with confidence what the Bishop and the Bulldog thought of Darwin that summer day, for they both had just finished writing essay reviews of the Origin—reviews which have been exactly preserved.

CHRISTIANITY, SOCIOLOGY AND THE MORAL ORDER
Charles P. C. Flynn, Miami University, Oxford, OH 45056

Sociology has been regarded as resting on philosophical and moral premises antithetical to those of Christian faith. In this paper an argument is made that sociological analysis began as an effort to replace what has been regarded as a traditional "Christian" moral order with one based on positivistic science. This assumption, however, is in my view incorrect, since the older moral order was not truly Judeo-Christian but Greco-Roman. Thus, rather than "replacing" Christian morality, sociology can and has in some cases served as a means of achieving a sociocultural and political order more congruent to genuinely Christian teachings, i.e., conforming to the moral teachings of Jesus. One instance in which this is true is with respect to the capacity of sociological analysis to illuminate the unintended consequences of social behavior, consequences which are often antithetical to the teachings of Christ. Moreover, it is argued that sociological "cynicism" and what Peter Berger has termed its "debunking" character is akin to Jesus' radical rejections of many existing social norms and values, particularly those pertaining to wealth and status-striving. Thus, rather than hindering and opposing genuine Christianity, sociology is observed as a tool to help foster the emergence of a more truly and genuinely Christian society.

THE GALILEO AFFAIR IN CONTEMPORARY PERSPECTIVE
Owen Gingerich, Harvard College Observatory, Cambridge, MA 02138

In 1632, the aging astronomer Galileo Galilei was forced by The Inquisition to disclaim any beliefs in the heliocentric Copernican system; he was placed under house arrest and forbidden to publish for the rest of his life. The Vatican's reopening of the Galileo case has focussed renewed interest on the battle of ideas in 17th-century Italy, but much of the recent press coverage has erred in claiming that the sun-centered system was banned as heresy. Professor Gingerich will examine the intellectual controversy over the Book of Nature versus the Book of Scripture, and will explain how Galileo defied the rules of logic and by so doing helped establish new procedures in scientific proceedings.

WILL THE UNIVERSE END WITH A BANG OR A WHIMPER?
Owen Gingerich, Harvard College Observatory, Cambridge, MA 02138

The 20th century has brought in a grand but chilling conception of a vast, almost empty universe both enormously large and enormously old. Convincing evidence portrays a primordial cosmic explosion in which the energy and matter was created approximately 20 billion years ago. The galaxies—colossal fragments of that primeval fireball—rush outwards with incredible speeds, creating space as they go. Today's number one cosmological question is: Will the galaxies continue their headlong dash forever, or will they slow to a stop and then retreat into a final fiery cataclysm? Although observations have long favored the first alternative, Professor Gingerich will indicate that, in light of new evidence, the question is not yet settled.

IS THERE LIFE ON OTHER WORLDS?

Owen Gingerich, Harvard College Observatory, Cambridge, MA 02138

Is there not just life, but intelligent life, on other planets circling distant stars in our Milky Way galaxy? This intriguing idea fires the imagination and motivates many astronomers today. Professor Gingerich will review the requirements for habitable environments and the mechanism for life, and he will then take a rather skeptical look at the prospects for intelligent life beyond the earth.

INTEGRATIVE APPROACHES FOR SCIENCE AND CHRISTIANITY: COMPLEMENTARITY

John W. Haas, Jr., Gordon College, Wenham, MA 01984

The relationship between religion and science has taken three major forms during the 20th century; the conflict theory, the compartment theory, and the theory of complementarity. If evangelicals are, in principle, unable to accept the idea that revelation in scripture and nature ultimately conflict or that one does not do justice to either scripture or nature by isolating one from the other then, complementarity needs to receive serious consideration as the third alternative.

In seeking to evaluate the value of the complementarian approach for complex issues in science and Christianity this paper will consider three questions: (1) Is there a clear definition of complementarity which is commonly held by those who appeal to the term? (2) Are there philosophical or theological implications inherent in the application of complementarity whose negative features offset any apparent gains in understanding? (3) If this is the case, can the complementarian approach be recast in terms which preserve its usefulness yet avoid philosophical implications which appear inconsistent with Christian faith?

THE SCIENCE OF THE REFORMERS

H. Harold Hartzler, Mankato, MN 56001

For some years I have been interested in what the reformers thought and wrote in the area of science. By the reformers I refer to men who were influential in bringing about the Protestant Reformation. Some of them were: John Huss, Hugh Latimer, Martin Luther, Philipp Melanchthon, John Calvin, John Knox, Huldreich Zwingli, Menno Simons, George Blauroch, Conrad Grebel, Michael Sattler and Jacob Hutter.

First of all it must be realized that the science of that day was vastly different from present day science. Some would say that it was a pre-scientific age.

Luther is quoted as saying: "People give ear to an upstart astrologer, who strove to show that the earth revolves, not the heavens or the firmament. This fool wishes to reverse the entire science of astronomy, but sacred Scripture tell us (Joshua 10:12) that Joshua commanded the sun to stand still and not the earth."

Philipp Melanchthon, who worked closely with Luther and was a leading educator at the University of Wittenberg, wrote shortly after the death of Copernicus: "The eyes are witness that the heavens revolve in the space of 24 hours. But certain men, either from the love of novelty, or to make a display of ingenuity, have concluded that the earth moves."

It must be said that most of the reformers, who said anything on the theory of Copernicus, agreed with Luther and Melanchthon.

Menno Simons, the leader of the Anabaptists later called Mennonites, argued quite extensively that Jesus was conceived by the Holy Spirit and that he became a human being in Mary but not of Mary. He agreed with others that a woman produced no seed or ovum.

PROPOSAL FOR A POPULAR PUBLICATION ON SCIENCE AND FAITH

Walter R. Hearn, New College, Berkeley, CA 94707

For many years the American Scientific Affiliation has toyed with the idea of publishing a popular newsletter or magazine devoted to science/faith issues. The editor of one of our present publications probes certain editorial, promotional and financial options to see if our Affiliations are ready to engage realistically in such a venture.

MATHEMATICAL PHILOSOPHY: A STATUS REPORT

Robert A. Herrmann, U.S. Naval Academy, Annapolis, MD 21402

In August 1978 a new mathematical discipline was discovered - a discipline named Mathematical Philosophy. In this paper a brief description of the procedures employed to construct mathematical models for metaphysical systems, in particular Christianity, will be discussed. The major purpose for this report is to describe the results which have thus far been obtained. These results include the semantical proof that such systems as Marxism, secular humanism and most atheism as practiced in our modern society are based entirely upon a logically inconsistent foundation. These results imply that such inconsistent systems will eventually collapse from this inherent logical inconsistency. However, this collapse could easily involve an irrational action which would envelope all of mankind in an unprecedented holocaust. These new philosophic procedures also yield a small partial glimpse of the extreme regularity and uniformity of God's Divine Kingdom and universe while retaining the apparent irregularity associated with mankind's perception of various one-time miracle events. This new discipline has application to such diverse areas as the U.S. Supreme Court 1973 abortion opinion which has been shown to be riddled with logical inconsistencies to the seemingly unrelated first mathematical model of Wheeler's cosmological pregeometry.

THE FALL OF MAN: HISTORICAL AND PSYCHIATRIC PERSPECTIVE

Walter C. Johnson, Hanover, MA 02339

The account of the Fall given in Genesis 3 describes how man fell from a state of righteousness and unimpaired daily fellowship with His Creator into a condition of sin and rebellion. An awareness of guilt and immediate separation from God instantaneously followed, together with the sentence of the curse involving suffering pain and both physical and spiritual death.

Romans: 1:18-32 graphically describes the psychological, ethical and religious implications of the Fall including humanity's degradation from an original state of monotheism into polytheism, animism, superstition and idolatry, accompanied by the development of sexual immorality, violence and all manner of wickedness which has utterly corrupted both individuals and society. This teaching of Scripture sharply contradicts the view that man is slowly evolving to a higher plane of moral and religious behavior and that monotheism has evolved from a primitive animism via polytheism. Evidence is presented in this paper from the findings of authorities in the fields of anthropology for an original monotheism, for monogamous marriage customs in early cultures with the

subsequent development of polygamy, and for the tradition in various cultures and mythologies of a lost age of innocence and bliss, pointing to a common human tradition and thereby corroborating the scriptural data relating to the Fall.

Furthermore, modern discoveries in psychosomatic medicine provide evidence that the tension, guilt and anxiety produced by the Fall and man's consequent separation from God contributed to the appearance of human suffering, disease and death. Anxiety, unresolved anger and guilt, depression and other emotional conditions acting via the autonomic nervous system can be factors in the production of organic changes in different organ systems of the human body and in the production of such diseases as bronchial asthma, stomach and duodenal ulcers, ulcerative colitis, neurodermatitis, hypertension and myocardial infarction. Also, conversion to a vital faith in the Lord Jesus Christ can have a beneficial effect upon the emotional and physical conditions of individual patients. These psychosomatic mechanisms will be discussed and illustrations given both from my own psychiatric practice and from the experience of others.

ON THE NATURE OF THE STAR OF THE MAGI

Sherman P. Kanagy, Illinois State University, Normal, IL 61761

Almost every imaginable phenomenon, both natural and supernatural, has been proposed as an explanation for the "Star" mentioned in the second chapter of Matthew. Most naturalistic explanations can be ruled out quickly by appeal to such criteria as duration, prominence, rarity of the phenomenon, and visibility of the phenomenon at the appropriate time. The most commonly accepted naturalistic explanation for the "Star" appears to be that of an unusual planetary conjunction.

It can be argued, however, on the basis of other criteria such as overall consistency with the context of Matthew 2 and the Biblical text as a whole, the probable meaning of the word "Star" as used by Matthew, and numerous other considerations, that no available naturalistic explanation fits the account in an acceptable way. Of the available options, the most probable appears to be that the "Star" should be identified with the "Shekinah Glory." Such an interpretation accounts well for the leading action of the "Star," provides consistency with previous Christophanies and the spectacular context of Christ's birth, and can explain the apparent appearance and disappearance of the "Star" among other factors.

TIME DILATION AND GENESIS

D. W. Kupke, University of Virginia, Charlottesville, VA 22908

Given that the "days" for the creation in the Genesis account meant solar days, then our sun was the clock used to compare the pace of prehistoric events. The pace of the sun clock in our historical era, however, is far slower than the pace at which the universe developed in Genesis according to our linear extrapolations of time for prehistory. Instead of disconnected and sudden appearances of created things (requiring neither the known laws nor any timespan at all), may we not infer that physical events were happening lawfully though very much faster during prehistory. That is, prehistoric clocks and current clocks, side by side, would not be keeping the same time—the latter would be much slower. A direct comparison between these two sets of clocks is not within our purview. There are circumstantial indicators, however, supporting the view that the clocks of prehistory could have been far faster than the pace of clocks when the historical period commenced. The cosmic blackbody radiation and the increased

recession velocities of galaxies with distance serve as such clues. In addition, the theories concerning black holes and that of matter creation since the beginnings of time can be applied in favor of time dilation in the historical period. A principal conclusion is that the literal six days for the development of the universe is not at all disproved—and is even plausible.

DRIFTING ALONG WITH CULTURAL CHANGE

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One of the basic principles of anthropology is cultural change. We see cultural change all around us: changes in clothing styles, tastes in music, concepts of public morality. The Church might be slower than secular society to accept some of these changes, but it does eventually accept most of them, for one element of our humanity is the tendency to drift along with cultural change. We drift into ways of thinking and acting which become, in effect, traditions. Most of these traditions are harmless, but some are not.

The word "drift" appears only once in the N.T. (RSV), in Heb. 2:1, "Therefore we must pay the closer attention to what we have heard, lest we drift away from it." But the concept of drift appears throughout Scripture: e.g., the backsliding of Israel, and the Pharisees' drifting into traditions which superseded God's commands. After N.T. times the Church drifted ever so slowly and over many centuries and became the Roman Catholic Church.

More recent examples of traditions subtly ensnaring us were the erroneous attitudes toward the black man in America and the Jew in Nazi Germany. Christians were involved in these attitudes and consequent actions, and Christians must learn to do better!

We must use all of God's gifts to help us pay closer attention to His Word. We already use the disciplines of semantics, linguistics and hermeneutics. It is time we enlist the study of cultural anthropology, as well. After all, science is simply the exercise of paying very close attention to God's creation. The Christian Church must pay close attention to the phenomena of cultural change and use our understanding of it to peel away the layers of tradition so as to see more clearly the truth that is there.

IS NEWTON IN HEAVEN?

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Sir Isaac Newton died in 1727, and from the date of his death until 1936 most of his religious writings were sealed. Today these writings remain largely unpublished and unavailable.

This discussion includes a history of his religious writings and reasons why they were sealed from public view, a discourse on some of his most controversial views, and an insight into the man who wrote as his epitaph, "Here lies that which was mortal of Isaac Newton."

COMPARATIVE RELIGION: A SCIENTIFIC LOOK

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The paper, "Religion: Man's Earliest Science," was presented in January 1981 at the Annual Joint Meeting of the Society of General Systems Research and the American Association for the Advancement of Science in their symposium, "Religion and Ethics: Man's Earliest Sciences" (cf. GENERAL SYSTEMS RESEARCH AND DESIGN, pp. 537-546; SGSR, Louisville, KY 40212, 1981 (1980)). The present paper extends those results by noting the two fundamental functions of each of Mankind's religions: (A) to provide for its adherents a model of the world; and (B) to provide for its adherents a social structure, or an order of behaviour.

Thus, Natural Science (A) and Social Science, or Law (B) are and always have been founded upon the religion of the society. Since Modern Science has been shown to be Mankind's search for necessarily universally accepted Truth, the pertinence of a scientific comparison of religions becomes paramount. Made clear is the progressive evolution of religions (e.g., from Judaism, to Christianity (Catholicism, Orthodox), to Islam, to Protestantism). Hence, for social survival, why does the historical perspective, when applied to our religions world wide, tell us that Protestantism (only?) allows us to attain a necessarily universally accepted truth? The answer lies in understanding that the Scientific Method is Mankind's unique characteristic; yet, the Scientific Method is a six-stage modelling process which merely mimes Nature's (God's) two earlier modelling processes (genetic, then neural) which have accounted for the survival of all Life on Earth to date (cf. AN EPISTLE TO DR. BENJAMIN FRANKLIN, Exposition-University Press, 1975 (1974)).

THE OPEN-ENDEDNESS OF SCIENTIFIC TRUTH

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An example from the history of science is given that illustrates how scientific truth is always found to be not closed but contingent and open. Arguments are given to support this position based upon:

- (a) the relevance of Goedel's theorem to scientific theorizing,
- (b) the concreteness of nature, and
- (c) the fact that both cosmic and biological evolution lead to the emergence of new structures in nature that are characterized by greater complexity.

It is also argued that the open-endedness of scientific truth has many implications such as Polanyi's assertion that the true objectivity of a scientific theory arises from its open-ended structure and, secondly, that this open contingency points beyond itself to the religious dimension.

Lastly a religious justification is given for the open-endedness of all truth.

THE BIBLICAL FIRMAMENT: VAULT OR VAPOR?

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It has been a common practice in recent Biblical studies to dismiss the Old Testament picture of the heavens as fallacious, since both Jews and Christians in antiquity thought the Bible pictured the sky as a solid dome. The usual arguments for a heavenly vault

are here compared with the Biblical data on the subject. It is suggested that the Scriptural picture is actually more consistent with what modern science has discovered about the subject.

A CHRISTIAN SOCIAL-SCIENTISTS RESPONSE TO HUMANISM
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It may be said that humanistic thinking pervades American society today as never before. Various advances and contributions of the sciences may reinforce the humanist's convictions that people are basically good and therefore, given time, capable of solving the world's problems. Although humanism tends to recognize highly-esteemed values and endorse altruistic efforts that may parallel Christianity, it is also felt that humanism, in contrast to Christianity, is predicated on false assumptions.

Historical factors are highlighted as they have contributed to the development and rise of humanistic thinking in Western culture. It is suggested that humanism is advocated in Twentieth century America as the preferred view by many educators scientists and civic leaders. Although humanism appears reasonable and appropriate, it is felt that it is a deceptive and misleading philosophy that stands in contrast to Christianity. The temptation for scientists to ascribe to humanistic thinking is perpetual. Furthermore, it is conceivable that social scientists and community-oriented persons in particular, may be vulnerable to humanistic thought. The position that a Christian professional might consider taking with regard to humanism is to be discussed and recommendations made.

A 15.7 LIGHT YEAR UNIVERSE?
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In 1908 Walter Ritz proposed an alternative to Einstein's Theory of Special Relativity. Ritz worked with classical kinematics whereas Einstein used Lorentz invariance. An integral part of Ritz' formulation is the constancy of the velocity of light with respect to the source, but not necessarily with respect to the observer. Einstein's theory contains the latter as well.

Ritz' theory for the velocity of light has been used to show that radiation from very distant portions of the universe would reach the earth in no more than 15.7 years. This theory is analyzed for internal consistency and in view of experimental results on theory should be rejected along with proposals for a young universe which are based upon it.

THE SCIENTIST AND PRESENT DAY PHILOSOPHY
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A.S.A. does well to stipulate what is meant within its community by Christian beliefs, for in the annual conferences of virtually any other organizations a speaker must first be clear about what he includes in and excludes from what a Christian must believe, may but need not believe, and must not believe. All revisionist interpretations of Christianity have roots in selected aspects of philosophical thought. In recent years the most powerful reinterpretations derive from the work of Dewey, Wittgenstein, Sartre, and Heidegger. The Christian who is a scientist needs to be cognizant of the effects of these views on current understanding of science, truth, inquiry, and the relation between scientific inquiry and Christian faith. As Christian the scientist

also needs to be aware that perennial in the West has been the recurrence of the totally man-centered, culturally derived interpretation of all these, and that the above mentioned thinkers are the most recent exponents of that philosophical stance. For all these man-centered thinkers reality is human reality — i.e., nature as in some sense (which varies from thinker to thinker) manipulated by the human mind trained in a particular cultural tradition. Truth is what in some sense solves individual secular problems. All inquiry is finding an answer to culturally conditioned questions. These four twentieth-century thinkers are variously sympathetic or unsympathetic to, informed about or ignorant of, science, the import of science for our culture, and the nature of scientific inquiry. Not one of them accepts Christian faith in a revelation as a genuine source of reliable belief. Yet, paradoxically even Christian thinkers are profoundly influenced by their work. The scientist as teacher needs to be aware of the impact of their views in order to keep before his students the God-centered interpretation of science. The scientist as investigator is an important creative contributor to an adequate understanding of science, truth, inquiry, and faith.

HUMAN INDUSTRY, ENVIRONMENTAL POLLUTION AND THE 2ND LAW
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In a time of increasing world Industrialization, it is important to understand the relationship between human industry and environmental pollution. It is held by some that the latter is an inevitable result of the former and that only by returning to simpler ways of the past can catastrophes such as predicted by the Club of Rome or other futurists be averted. It has recently been proposed that this relationship can be analyzed by application of the 2nd Law of Thermodynamics and that pollution should be "redefined" as a manifestation of "entropic processes" producing greater disorder. Thus, human endeavor is assumed to be largely responsible for the long and short range troubles man faces by speeding up the entropy increasing process.

It is the intention in this paper, first, to point out several fundamental fallacies of such a view and to question the validity of using the 2nd Law in this situation. While the resources of the world are limited and conservation of fuel and materials are a matter of stewardship, application of the entropy law in this instance only confuses the issue, since it is not a controlling factor.

Secondly, it is intended to consider what factors do govern the relationship between industry and the quality of the environment and to suggest how improvements in such quality can be realized by the application of engineering principles rather than by diminishing or eliminating technology.

**DEATH, DYING, THE FEAR OF DEATH AND BELIEFS CONCERNING
THE END OF THE WORLD**

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Earliest records indicate that persons have been fearful of that time in every life when life ends. Religion and magic was devised to lessen the pain of the inevitability of death. With some, a severe depressive illness occurred called THANATAPHOBIA by Sigmund Freud. Most primitive tribes had myths of heaven and a means of attaining it or created philosophical systems of death and renewal, either cyclic in periods of recreation (Hindu) or reincarnation in another body and/or form.

Since modern sciences have observed that astronomical systems operate in systems, ideas of entropy predict that the present earth and solar system will eventually change natural geography and thermal systems so that life will be impossible on earth. Such possibility, plus the availability of nuclear destruction, has activated many schemes to relieve the emotional impact of either sudden (atomization) or gradual (aging) types of death.

Some schemes of anxiety relief include chemistry (tranquilizers), courage (fatalism) or religious promise (heaven or reincarnation). This paper will explore both secular and religious answers to the human fear of extinction, including the Christian answer of ETERNAL LIFE, as described in the Scriptures.

While the emphasis of the paper will be on logical, historical answers to the problem of death, room will be made for the Evangelical, Christian HOPE in salvation and the love of God as currently included in the ASA accepted beliefs.

ANCIENT ASTRONOMY AND PAUL, PETER AND JUDE
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Psalm 19:1 boldly asserts that the heavens declare the glory (doxa - LXX) of God. The theme is expanded by Paul in I Cor. 15:42, where he differentiates between the glory () of one heavenly body and another. Adolf Deissmann has pointed out in his exhaustive studies that letters and writings of the day indicated that many in the Graeco - Roman world believed that God ruled the heavens through fixed laws and not capriciously. It was wisdom, as they viewed it, to accept God's will in His ruling of the universe.

Paul was caught up to the third heaven (heos tritou ouranou). Some ancient writers distinguished seven heavens, others three - the clouds, the stars and the abode of God. (II Cor. 12:2 ff). An unusual word is found in II Peter 1:19 which is used only once in the N.T. It is - phosphoros, lucifer (Lat.), Lucero (Span.) meaning lightbearer. It has both classical and LXX roots, being used by Plato, Plutarch and others for the planet Venus.

In Jude 13, there are mentioned - asteres planetai "for whom blackest darkness has been reserved forever." This expression wandering stars has been found in secular writers referring to the planets. Ancient astronomy was ready at hand and imbedded in the culture for applications and illustrations of great spiritual truths and words of admonition.

DIVINATION IN THE ANCIENT WORLD
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Sir James Frazer characterized "Magic" as a kind of pseudo-science as opposed to "Religion." Like science magic relied upon a series of causes and effects rather than appeals to super-natural beings. Though the causal connection may have usually been mistaken, there was expended a great deal of effort, imagination and care to record possible connections.

In the related area of "Divination," the foretelling of the future, we can see this process in the ancient world. The ancient soothsayers, astrologers, and hepatoscopists were the "wise men," the respected "scientists" of the ancient world.

We owe to the records of the astrologers our knowledge of ancient celestial phenomena. The skill of hepatoscopy, the examination of livers, was based on an intimate knowledge of anatomy and upon carefully recorded catalogues.

Magical and divinatory texts of the ancient world reveal the popular religion of the day, the cares and fears, e.g. for infant survival, which were dominant. They are a neglected but invaluable source of information for the historian and for the biblical scholar.