

Official Program

THIRTY-FIFTH ANNUAL MEETING

of the

AMERICAN SCIENTIFIC AFFILIATION

(Incorporated)

The American Scientific Affiliation is an association of men and women who have made a personal commitment of themselves and their lives to Jesus Christ as Lord and Savior, and who have made a personal commitment of themselves and their lives to a scientific understanding of the world.

August 8-11, 1980

TAYLOR UNIVERSITY
Upland, Indiana

11:00 AM "Abortion: An Exercise in Biomedical Ethics," *D. Gareth Jones, University of Western Australia, Perth, Australia*

11:30 AM "The Ethics of Utilization of Non-Renewable Energy Resources," *Wayne U. Ault, The King's College, Briarcliff Manor, New York*

Parallel Session J — Ministry Programs

Chair: *Howard Claasen, Wheaton College (Meeting Room B)*

11:00 AM "The Federation Christian Fellowship," *A. Kurt Weiss, Medical School of the Univ. of Oklahoma, Oklahoma City, Oklahoma*

11:30 AM "Computer Assistance Program," *R. Waldo Roth, Taylor University, Upland, Indiana*

Parallel Session K

Chair: *Chi Hang Lee, RJR Foods (Meeting Room C)*

11:00 AM "Telecybernetics: Today's Challenge," *G. Arthur Mihram, Haverford, Pennsylvania*

11:30 PM "Application of the Surface Mining Control and Reclamation Act of 1977 to Operating Underground Coal Mines: A Consultant's Perspective," *Donald V. Gaffney, Monaca, Pennsylvania*

12:15-1:00 PM Lunch

Parallel Session L — Nuclear: A Critical Review

Chair: *Frank Anders, University of Northern Colorado (Meeting Room A)*

1:30 PM "The Effects of Nuclear Radiation: Physical," *Frank Anders, University of Northern Colorado, Greeley, Colorado*

2:00 PM "The Effects of Nuclear Radiation: Biological," *Kenneth V. Olson, University of Northern Colorado, Greeley, Colorado*

2:30 PM "Creation, Conflict, Commitment," *Harold H. Hartzler, Mankato State University, Mankato, Minnesota*

3:00 PM Break

Parallel Session M — "Science and the Arts — Complementary Channels for Revealed Truth"

Chair: *Robert Herrmann, Oral Roberts University (Meeting Room B)*

1:30 PM "The Physics of Painting" (Tape-Slide Presentation)

2:00 PM "Structuring and Sequencing DNA — A Feeling that the Creator Has Been Tampering," *Robert Herrmann, Oral Roberts University, Tulsa, Oklahoma*

2:30 PM "Aesthetics and Science," *Derek Chignell, Wheaton College, Wheaton, Illinois*

3:00 PM Break

Parallel Session N — Studies in Sociology

Chair: *Lester Zimmerman, Goshen College (Meeting Room A)*

3:30 PM "A Critical Era for Normative Organizations: Extrapolations from the Roman Catholic Priesthood," *Zondra Lindblade, Wheaton College, Wheaton, Illinois*

4:00 PM "Behavioral Views of Punishment: A Critique," *Rodger K. Bufford, Psychological Studies Institute, Atlanta, Georgia*

4:30 PM "An Empirical Comparison of Evangelical Christians and Other Peoples," *David O. Moberg, Marquette University, Milwaukee, Wisconsin*

Parallel Session O — Issues in Education

Chair: *Duane Kauffmann, Goshen College (Meeting Room B)*

3:30 PM "The Church and the Future of Education," *T. M. Moore, National Institute of Biblical Studies, Pampano Beach, Florida*

4:00 PM "Incorporating the Integration of Science-Christianity Themes at the College Level," *John W. Haas, Jr., Gordon College, Wenham, Massachusetts*

4:30 PM "Booklearning: The Textbook Controversy," *Kenneth V. Olson, University of Northern Colorado, Greeley, Colorado*

Parallel Session P — Current Health Needs

Chair: *Kenneth Schemmer, MD., Anderson, Indiana (Meeting Room C)*

3:30 PM "Understanding Stress," *Marlin B. Kreider, Worcester, Massachusetts*

4:00 PM "Determent of Alcoholism by Disulfiram (Antabuse): Physiological, Psychological and Biochemical Effects," *Charles G. Sanny, College of Osteopathic Medicine and Surgery, Des Moines, Iowa*

4:30 PM "Physical Fitness and the Course of Life," *Edmund R. Woodside, Pasadena, California*

5:00 PM "Competition," *Charles Flynn, Miami University, Oxford, Ohio*

5:30-6:30 PM 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 862

Elgin, Illinois 60120

FINAL PROGRAM — ANNUAL MEETING OF THE AMERICAN SCIENTIFIC AFFILIATION

FRIDAY, AUGUST 8

1:00-6:00 PM Registration (Lobby of English Dorn)

6:30-7:15 PM Supper

7:30 PM Opening Session (Meeting Room A)

Chairman—A. Kurt Weiss, President of ASA

Welcome—Waldo Roth, Indiana Local Section of ASA

Announcements—William Sisterson, Executive Director, ASA

Introduction—Edwin Yamauchi, Chair of Program Committee

Opening Address "Reflections on the Practice of Outworn Creeds," Walter R. Thorson, University of Alberta

9:00 PM Ice Cream Social

SATURDAY, AUGUST 9

7:30-8:00 AM Breakfast

8:30 AM Group Devotions (Meeting Room A)

PLENARY SESSION A —

"Environmental Crisis: The Ethical Dilemma"

(Meeting Room A)

9:00 AM This symposium will report and summarize the major meeting of June 25-28, 1980 on this topic sponsored by the Au Sable Trails Institute. Led by Edwin R. Squiers of Taylor University, it will address the ethical aspects of major environmental issues in the context of Christian faith and practice. Speakers will be chosen from more than a score of scholars presenting papers at the June meeting.

10:30 AM Break

The early publication of this program prohibits more detailed information on speakers and topics. More complete information will be available before the meeting.

12:15-1:00 PM Lunch

Parallel Session B — Philosophy of Science

Chair: Donald Munro, Houghton College (Meeting Room A)

1:30 PM "Human Freedom with Scientific Determinism," John A. McIntyre, Texas A&M University, College Station, Texas

2:00 PM "The Human Side of Scientific Creativity," Walter J. Neidhardt, New Jersey Institute of Technology, Newark, New Jersey

2:30 PM Break

3:00 PM "Scientific Truth: Is it Transient or Enduring?," Daniel E. Wonderly, Oakland, Maryland

3:30 PM "Building Biblical Credibility Among Scientists," Dave Fisher, Slavic Gospel Association, Wheaton, Illinois

Parallel Session C — Mental Health Perspectives

Chair: Stuart Swenson, Dyer, Indiana (Meeting Room B)

1:30 PM "Spiritual Development from a Psychological Perspective," Paul D. Young, Houghton College, Houghton, New York

2:00 PM "Demon Possession and Mental Illness," Walter C. Johnson, Hanover, Massachusetts

2:30 PM Break

3:00-4:00 PM "Falling Into Hopelessness: Can Behavioral Methods Help in Coping With Depression?," Stanley E. Lindquist, Link Care Foundation, Inc., Fresno, California

Parallel Session D — Help for the World's Poor

Chair: Warren Hoffman, Fort Wayne, Indiana (Meeting Room C)

1:30 PM "The HNGR Program," Wayne Bragg, Wheaton College, Wheaton, Illinois

2:00 PM "Is Good, But Inexpensive, Housing Possible Today?," Edward Coleson, Spring Arbor College, Spring Arbor, Michigan

2:30 PM Break

3:00 PM "Food & Hunger in the Modern World," Frank Anders and Kenneth V. Olson, University of Northern Colorado, Greeley, Colorado

3:30 PM "Newcomb's Problem and Divine Omnipotence," Edward B. Davis, Indiana University, Bloomington, Indiana

NATIONAL BUSINESS MEETING OF THE ASA

4:00 PM Everyone invited to Annual Business Meeting (Meeting Room A)

ANNUAL BANQUET

6:30 PM Dinner (In room next to regular cafeteria)

7:30 PM Presidential Address — "What I Wish for Every Member of the ASA," A. Kurt Weiss, President of ASA

SUNDAY, AUGUST 10

8:00-9:00 AM Breakfast

9:30 AM Group Devotions (Meeting Room A)

10:00 AM Participation in local churches

12:15-1:00 PM Lunch

PLENARY SESSION E —

Address by Dr. Thorson (Meeting Room A)

1:30 PM "Science as the Natural Philosophy of a Christian," Walter R. Thorson, University of Alberta

Parallel Session F — The Mind: Real and Artificial

Chair: Ann Hunt, Lilly Research Labs (Meeting Room A)

2:30 PM "The Nature of the Transitions of Growth," C. Markham Berry, Atlanta Counseling Center, Atlanta, Georgia

3:00 PM Break

3:30 PM "Implications of Brain Research for Christians," Daniel Geisler, University of Wisconsin, Madison, Wisconsin

4:00 PM "The Christian Mind," Evelina Orteza y Miranda, University of Calgary, Calgary, Alberta

4:30 PM "Some Implications of Artificial Intelligence Research," Dennis L. Feucht, Tektronix Laboratories, Portland, Oregon

5:00 PM "Can Computers Think? A Christian Interpretation," Richard R. Harrison, Lawrenceville, New Jersey

Parallel Session G — Theology, Philosophy and Science

Chair: David Moberg, Marquette University (Meeting Room B)

2:30 PM "The Argument of Methodology in the Human Sciences," Zondra Lindblade, Wheaton College, Wheaton, Illinois

3:00 PM Break

3:30 PM "Some Aspects of the Theological Basis of Modern Science," James Rynd, Biola College, La Mirada, California

4:00 PM "Platonism, Theology and Modern Physics," George L. Murphy, Wartburg Seminary, DuBuque, Iowa

4:30 PM "Natural Theology and Revelation," James Martin, State College, Pennsylvania

5:00 PM "Research on Research: Propositional Presuppositions," Donald L. Grigsby, University of Alabama, Birmingham, Alabama

Parallel Session H — Creation and Evolution

Chair: Robert J. Hughes, III, Fort Wayne, Indiana (Meeting Room C)

2:30 PM "A Unique Exposition of Genesis 1:1-10," Don Wardell, Winona Lake, Indiana

3:00 PM Break

3:30 PM "Open System, Irreversible Thermodynamics and Origin of Life," Walter L. Bradley, Texas A&M University, College Station, Texas

4:00 PM "Self-Ordering Tendencies of Amino Acids in Polypeptides," Randy Kok, Texas A&M University, College Station, Texas

4:30 PM "Vestigial Organs and Evolution," Jerry Bergman, Bowling Green State University, Bowling Green, Ohio

5:00 PM "Open System, Irreversible Thermodynamics and Living Systems," Walter L. Bradley, Texas A&M University, College Station, Texas

5:30-6:30 PM Supper

7:30 PM Interest Groups
Topics, leaders and locations announced at Meeting. Any may be added at Meeting through Saturday night.

MONDAY, AUGUST 11

7:30-8:00 AM Breakfast

8:30 AM Group Devotions (Meeting Room A)

FINAL PLENARY SESSION (Meeting Room A)

9:00 AM "The Biblical Insights of Michael Polanyi," Walter R. Thorson, University of Alberta

10:00 AM RESPONSE to Thorson, J.C. Keister, Covenant College, Lookout Mountain, Tennessee

10:30 AM Break

Parallel Session I — Current Ethical Questions

Chair: J. Phillip Bays, St. Mary's College (Meeting Room A)

**ABSTRACTS OF PAPERS TO BE PRESENTED
AT THE 1980 ANNUAL MEETING OF THE ASA
AUGUST 8 - 11, 1980**

THE EFFECTS OF NUCLEAR RADIATION: PHYSICAL

Frank W. Anders, Univ. of Northern Colorado, Greeley, CO 80631

A discussion and slide show of the effects of radiation from the nuclear fuel cycle and nuclear proliferation on the world populations. The anti-nuclear side of the nuclear energy issue will be stressed.

FOOD AND HUNGER IN THE MODERN WORLD

Frank W. Anders, Univ. of Northern Colorado, Greeley, CO 80631

A slide show with commentary on the comparative incidence of food and hunger in developed and developing nations. Is man totally responsible for being his brother's keeper both in-utero and ex-utero? Does mankind have the inalienable right not to starve?

THE ETHICS OF UTILIZATION OF NON-RENEWABLE ENERGY RESOURCES

Wayne U. Ault, The King's College, Briarcliff Manor, NY 10510

This paper poses the energy problem with which our nation as well as the world family of nations is enmeshed. Although the less-developed nations are not as extensively affected at present, their aspirations for development are greatly affected. Several courses of action in utilizing alternate energy sources are possible, each with its own distinctive consequences. The dilemma drives us to consider our theology of nature and attendant ethical issues: Divine ownership and human stewardship; economic purposes of energy resource use, and relative priorities related to human qualities of life; rights of other people (nations) and successive human generations; responsibility for replacement of energy sources through research and development; aesthetic responsibility of man for nature; and ethics of created demand for materials or energy. We must consider how our biblically-based theology of nature and human responsibility (stewardship) affects our possible courses of action.

VESTIGIAL ORGANS AND EVOLUTION

Jerry Bergman, Bowling Green State University, Bowling Green, OH 43403

Current and past evolutionary theory would imply that as biological organisms undergo physical change, certain organs would lose part or all of their functions. These organs, known as vestigial organs, were, until recently, seen as an important proof of evolution. Of the approximately 180 vestigial organs compiled at the turn of the century, it is now almost unanimously agreed that virtually all of them have an important function in the human body. The few human organs often believed to be vestigial organs were also examined, and it was concluded that there is evidence that all of them have an important function. It was also concluded that the concept of "vestigial" is itself vestigial, at least in humans.

Unfortunately, the belief in vestigial organs has both discouraged research on the function of many bodily organs and has encouraged certain medical practices which are now regretted. An example is the medical requirements that the appendix be removed if and when any abdominal surgery is done on a patient (because it was seen as useless, and to be removed in all persons). Today, it is believed that the appendix is an important part of the body's defense system. Other examples include the once common practice of removing the tonsils and adenoids, both of which are important organs (especially in young persons).

THE NATURE OF THE TRANSITIONS OF GROWTH
C. Markham Berry, Atlanta Counseling Center, Atlanta, GA 30341

The main focus of the attention of psychoanalysis during the past twenty-five years has been on that part of human development which occurs during the very early, pre-oedipal period. This is considered to be a process of separation and differentiation which moves from an original primitive fusion of the mother and infant, and leads to the independence of the child. The end is an independent individual, distinct from the mother who is free to face the adventures of living without residual emotional entanglements. Biblical insights strongly suggest that the end point of human development would be better conceptualized as a special capacity to relate to others in a paradoxical way — to be able to form a new union which respects the diversity of the individuals. This is likened to one body consisting of many members. The union is real, concrete and fundamental, but the diversity of the individuals, accomplished in the separation and individuation is not lost, but rather fulfilled.

In this paper the process of early human development from six months to three years is reviewed in the conceptual model of Fusion — Separation and Differentiation — Re-union. This same three-stage movement is then shown to be repeated in identity crises later in life: the oedipal, adolescence and midlife. It is further suggested that the original movement of God in Creation was a separation and differentiation of a universe from an original pregnant chaos-fusion. The cosmos is now seen to be in the process of re-union in Christ. Human development, then is a micro-enactment of history as seen in the Bible. In a word, phylogeny (in human development) recapitulates cosmology and predicts destiny.

OPEN SYSTEM, IRREVERSIBLE THERMODYNAMICS AND ORIGIN OF LIFE
Walter L. Bradley, Texas A&M University, College Station, TX 77843

The thermodynamic problems associated with the origin of DNA and protein will be discussed in terms of open system, irreversible thermodynamics. The nature and magnitude of the enthalpy and entropy work required in the synthesis of protein will be presented using calculations by the author and thermodynamic measurements from the literature. Traditional explanations for how this work was accomplished in a prebiotic environment will be examined, including self ordering, clay catalysis, solar energy and autocatalysis. Arguments by analogy to "water freezing in the Great Lakes in winter" will be shown to be irrelevant.

- for peptide synthesis*
1. thermal energy
 2. radiant
 3. chemical (or condensing agents)
 4. " (energetic precursors)
 5. clay catalysis

*wrong bonds
as as
random seq* } *as as joining
with thermal energy*

peptide? in 5 bil. yrs. $\approx 10^{-10}$ "

1. chance
 2. mineral catalysis
 3. self-ordering tendencies
 4. autocatalysis
- } theory*

OPEN SYSTEM, IRREVERSIBLE THERMODYNAMICS AND LIVING SYSTEMS
 Walter L. Bradley, Texas A&M University, College Station, TX 77843

Basic principles of open system, irreversible thermodynamics will be presented. Distinctions between open system, irreversible thermodynamics and closed system, equilibrium thermodynamics will be made. The application of open system, irreversible thermodynamics to living systems will be discussed. Prigogine's contribution in this area will be briefly summarized.

HNGR: A THIRD-WORLD STUDY-SERVICE PROGRAM
 Wayne Bragg, Wheaton College, Wheaton, IL 60187

How can Christians, both generalists and professionals, confront world poverty, hunger, disease, and resource scarcity and work toward solutions? A sixteen minute slide show will present how the Human Needs and Global Resources Program of Wheaton College equips students to deal with these problems through their personal and professional lives. Following this presentation, an HNGR staff member will answer questions on issues such as the Program's longrange effectiveness, funding, curriculum, and replicability, as well as the broader issues of Third World development.

This session will be of value to people interested in applying their skills to the needs of the Third World, as well as to educators. The Program is looking for people interested in research and consulting for development projects. Syllabi, student research reports, and other material will be available for perusal.

BEHAVIORAL VIEWS OF PUNISHMENT: A CRITIQUE
 Rodger K. Bufford, Psychological Studies Institute, Atlanta, GA 30308

Most psychologists recognize that assumptions play an important role in the interpretation of data. Simplistically described, a scientific theory consists of three elements: assumptions, observations, and interpretations. Interpretation involves making sense of observations in terms of assumptions. Thus the assumptions and preconceptions of an investigator will inevitably affect his approach to the interpretation of scientific data. The view of punishment held by B. F. Skinner and a number of his behavioral colleagues is discussed as an example of this phenomenon.

Although never stated explicitly, Skinner seems to have approached the analysis of data regarding the effects of punishment with the view that punishment is harmful. After reviewing the data, he concludes that punishment does not work. An alternative approach to interpretation of the same data, beginning with the assumption that punishment can be an effective behavior control technique arrives at quite different conclusions from those reached by Skinner: punishment, used under suitable conditions, is an extremely effective behavior control technique. Such a view is more consistent with Biblical teachings regarding punishment and discipline.

Discussion will focus on the symmetry of effects of punishment and reinforcement. It will be shown that both reinforcement and punishment have effects when they are presented after a response, that the effects extinguish when the contingencies are

removed, resume when they are reinstated and can be overridden by other more powerful consequences administered at the same time to the same behavior.

IS GOOD, BUT INEXPENSIVE, HOUSING POSSIBLE TODAY?
Edward Coleson, Spring Arbor College, Spring Arbor, MI 49283

For several years now people have been talking about discovering, or rediscovering, a more simple lifestyle. For many Christians, this is our urgent duty. Yet little progress has been made on our greatest expenditure: the cost of a home.

The prohibitive cost of housing in the modern era seems a bit surprising when one recalls that our ancestors were much less plagued by this problem. It is true that the settlers on the frontier built log cabins, but our European forefathers often made their homes from the "good earth" even in humid lands like England. They used a variety of techniques from ramming moist soil in heavy forms to using sun-dried bricks, a practice we associate with Egypt and our arid Southwest. With a few simple precautions they stood for centuries, even in rainy areas. They were noted for their insulating qualities as well as low cost.

There have been modern attempts to revive these ancient practices, such as the extensive scientific work on rammed earth done at the State Experiment Station in South Dakota. The National Bureau of Standards also did experimental work on the several methods of earth construction. These studies included a variety of laboratory tests. In recent years emulsified asphalt has come into use as a means of preventing water damage to the earth walls.

In addition to being familiar with the literature and seeing earth used for building in the U.S.A., Latin America, England, and Africa, I have worked with it myself. I have also worked in an industrial laboratory on similar problems and for several years.

NEWCOMB'S PROBLEM AND DIVINE OMNIPOTENCE
Edward B. Davis, Indiana University, Bloomington, IN 47405

Several variants of and solutions to Newcomb's box problem are presented and analyzed for their theological implications. Current disputes are shown to reduce to a controversy over "reverse causality," something very much like foreknowledge. If a radical theism (which affirms God's sovereignty over the future as well as the past) is asserted, the box problem can illuminate concepts such as predestination/free will, prayer, and prophecy, providing new understandings of old ideas.

SOME IMPLICATIONS OF ARTIFICIAL INTELLIGENCE RESEARCH
Dennis L. Feucht, Tektronix Laboratories, Portland, OR 97215

Rapid progress in computer technology and artificial intelligence (AI) research raises wider questions about the meaning and use of machine intelligence. Since "intelligence" is an idea with a wide range of meanings, its use in AI research is necessarily limited to a deterministic, scientific context. Also, a machine is a formal system, implemented using available technology. As machine capabilities advance to rival human intelligence, man's uniqueness and dignity is not thereby threatened. Biblically, man's uniqueness is found in his relation to his Creator rather than in any intrinsic properties found

within man. The latter approach leads to difficulties similar to those found in a God-of-the-gaps approach to God's activity in nature. Also, the ethics of using intelligent machines is qualitatively no different than use of any other artifacts. Because technology can be used for good or evil, a Christian will use it for good purposes as an act of faithful stewardship in the sight of God.

BUILDING BIBLICAL CREDIBILITY AMONG SCIENTISTS

David Fisher, Slavic Gospel Assoc., Wheaton, IL 60187

"It was impressed on me again the almost zero credibility that Biblical Christianity has in the general scientific community. We must do more to raise that credibility if there is ever to be a significant response to the Lord among scientists," Bill Sisterson observed in the Feb/Mar 1978 ASA Newsletter.

That observation is even more valid in the Soviet Union, where science and pseudo-science are used as tools to indoctrinate students and citizenry with atheism. Specific statements include: "Science has proven 100 times that God doesn't exist." "Matter created itself, with no need for a god at any stage of its development." "No educated person believes in God." "Cosmonauts couldn't even find God in space."

Countering these statements, the Radio Academy of Science went on the air earlier this year on five shortwave stations, covering the entire USSR with 850 kilowatts of power. The format is a conversational-style discussion of documented discoveries that demonstrate the Bible's credibility, plus testimonies from Christians in the sciences.

David Fisher, radio missionary directing his joint project of Slavic Gospel Association and Trans World Radio, will report on the first year's programs, including a 12-minute English sample tape. He will encourage ASA members to provide material from their areas of expertise, and discuss how spin-off ministries can build Christian credibility in the American scientific context.

APPLICATION OF THE SURFACE MINING CONTROL AND RECLAMATION ACT OF 1977 TO OPERATING UNDERGROUND COAL MINES: A CONSULTANT'S PERSPECTIVE

Donald V. Gaffney, Monaca, PA 15061

Upon enactment of the Surface Mining Control and Reclamation Act of 1977 (SMCRA), operators of underground coal mines found themselves under the regulation of a new environmentally oriented Federal agency, the Office of Surface Mining (OSM). Consequently, many operators have arranged for independent consultants to provide technical expertise and liaison services.

Many practical concerns have been expressed during performance of these services, but most deal with ambiguity or satisfying the law. Continued attempts have been made to clarify the regulatory approach and relate it to the intent of the Act. These interpretations are used to estimate the technical level of effort required and resolve conflicts where compliance with the regulatory requirements is impossible or impractical.

As demonstrated through short case histories and other illustrative examples, there are seldom easy solutions to these concerns. However, previous exposure to these types of concerns in a Christian context can provide a viable perspective from which to work for their resolution.

SOME IMPLICATIONS OF BRAIN RESEARCH FOR CHRISTIANS
C. Daniel Geisler, University of Wisconsin, Madison, WI 53705

Significant advances are being made in brain research. In particular, improved methods for investigating the structure and function of individual nerve cells are providing much new information. Some projects are investigating the sensory systems, such as hearing. The way sensing organs, like the ear, encode incoming signals are understood in broad outline and emphasis is shifting to the study of how different parts of the brain extract information from the coded signals. The sensory systems are proving extremely complex, yet beautifully tailored for their jobs. Other projects concern "higher functions." Perhaps best known are "split-brain" studies, involving destruction of the main connections between the two cerebral hemispheres. With little direct inter-hemispheric communication left, each of the hemispheres seems to function best at certain types of tasks. This research raises several points of interest for Christians. First, the theory that the brain can be treated as a biological computer is receiving increased support, not only from the general successes of brain science but from specific conditions such as the split-brain subjects. Yet the field is still in its infancy. The physical correlates of such crucial attributes as memory are not understood, and there are practically no ideas concerning what volition or consciousness are. Thus scientific theories about whether or not humans possess a soul remain without compelling predictive tests. Secondly, the machinery of the brain is so incredibly complicated and sophisticated that it leaves one gaping in awe. Jeremiah tells us that the Lord "established the world by his wisdom and by his understanding stretched out the heavens" (Jer. 10:12). Those words can also be applied to the brain, for it too proclaims the Lord's wisdom and skill.

INCORPORATING THE INTEGRATION OF SCIENCE-CHRISTIANITY
THEMES AT THE COLLEGE LEVEL

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

Christian faculty members have access to a wide variety of books and conferences which deal with the general category of Christianity-science integration. The use of these materials in the context of "doing integration" at the college level is related to the nature of the institution and the predilections of the teacher. The "overtly" Christian college can provide a setting which is conducive to this effort when faculty and administration agree that integration is an important component of learning.

Typically, the approach to integration has been left to individual faculty with little effort toward providing a means whereby the basic integrative features for a particular discipline receive adequate treatment. This paper will consider integrative issues appropriate to the natural sciences. Attention will be given to the following questions:

- (1) What are those topics which all undergraduates should consider?

(2) What topics and levels of development are most appropriate for science majors?

(3) What are effective mechanisms for introducing these topics into the classroom?

(4) How can science majors enhance their ability to deal with ethical and social issues associated with their profession?

CAN COMPUTERS THINK? A CHRISTIAN INTERPRETATION

Richard H. Harrison, Lawrenceville, NJ 08648

In the Time magazine essay for February, 1978, Dr. Robert Jastrow suggests that as computers become faster and more powerful they will eventually be the dominant forms of intelligent life on earth, replacing man. This projection calls for a Christian response and interpretation.

Programmable digital computers today indeed fulfill many functions which if performed by a man could be called intelligent. Turing proposed in 1950 a thought experiment designed to show that the difference between computers and thinking human beings is essentially trivial. He then raised several objections to his own stance and countered with answers. Other theorists have not been so sure. Types of problems solved by computers and human beings may be classified as: (1) mathematical or logical tasks where context is unimportant, (2) tasks involving specified meaning, (3) problems where situation and context are important. Problems may be also classed as inductive vs. deductive or as original vs. copied. The questions of consciousness, emotions, morality, and religion also enter into any comparison between man's thinking and computer capabilities.

Christian solutions to the apparent "future shock" caused by clever computers take the form of (1) maintaining the computer will never be proved similar to man in particularly human characteristics such as originality and religious awareness or (2) hypothesizing that even if computers do become more like human beings it is God Who has given man the capacity to develop computers so that they are in one sense procreations.

CREATION, CONFLICT, COMMITMENT

H. Harold Hartzler, Mankato State University, Mankato, MN 56001

We live in a marvelous universe, created by God, sustained by God, obeying His commands and fulfilling His own divine will. However, Satan has entered a part of this universe, man has been deceived and evil abounds, with the result that conflict is seen everywhere in the world. The result has been bloodshed and war from the very beginning of the human race. However there is still hope for all who put their trust in Jesus Christ. We are not compelled to do that which is evil but can commit our lives to the one who is able to save even to the uttermost.

This paper portrays some of the wonders of the material universe and shows how the Christian, committing his life to Jesus Christ, is able to overcome the evil forces in this world. In particular, the author of this paper points out the futility of war as a method of settling international problems. As Guy F. Hershberger has stated in "War, Peace and Nonresistance:" "It is clear, therefore, that the way of peace and perfection has been the will of God for His people at all times, and that any conduct short of

this has been due to the sins of men. Even in the days of the old covenant it was God's will that his people should follow the way of peace and love, and had they been wholly obedient to God's will the wars and bloodshed of the Old Testament era would no doubt have been avoided."

With the advent of nuclear energy and the threat of the atomic bomb, it should be evident to any thinking person that we simply cannot anymore make use of the methods of warfare. Senator Mark O. Hatfield has stated in a recent article in Christianity Today: "The United States today possesses about 31,000 nuclear warheads, both strategic and tactical. This equals eight billion tons of TNT, or the equivalent of 625,000 Hiroshima-type bombs. This stockpile can kill every Russian 36 times. Unleashing this power would ensure the virtual destruction of the earth, yet we continue to pour our financial and intellectual resources and our scientific ingenuity into increasing these arsenals still further."

In spite of severe warnings like this we read in the current religious press: "Experts at places like the Massachusetts Institute of Technology and the Stockholm Peace Institute are now saying that nuclear war is no longer just possible, it is probable—even inevitable." May God intervene to keep us from such a tragedy.

BIOLOGICAL EFFECTS OF NUCLEAR RADIATIONS

Carl E. Johnson, Jefferson County, Colorado

New and old data concerning effects of various radio nucleides emanated from Rocky Flats plant-Energy Systems Group, U.S. Department of Energy in Colorado and a discussion of their effects on man and other living things. Evidence regarding these effects will be presented. What are the effects of doses below one Roentgen on human populations?

DEMON POSSESSION AND MENTAL ILLNESS

Walter C. Johnson, Hanover, MA 02339

From prehistoric times until the Middle Ages the most popular explanation of the cause of emotional disorders was demonic influence or possession but today the various theoretical frameworks invoked to explain the phenomena of mental illness including the biological, psychoanalytic, behavioural and sociological models are all undergirded by the philosophy of secular humanism which excludes the supernatural.

However, the Bible clearly teaches the existence of Satan and fallen angels and describes several examples of demon possession together with the casting out of evil spirits by the Lord Jesus and His disciples.

Furthermore, contemporary missionaries, pastors and even psychiatrists have described authentic cases of demon possession.

It would appear from Scripture that a Christian cannot become demon possessed because he is indwelt by the Holy Spirit but can fall under demonic influence. A non-Christian can become demon possessed.

Drug addiction, mental illness, repeated and deliberate rejection of Christ and continued wilful yielding to sin may render a person more vulnerable to occult bondage.

The Bible also indicates that involvement with occult practices (expressly forbidden in Scripture) may trigger off both physical and mental illness. Such sins in the fathers may lead to occult bondage and emotional disorders in the children.

The symptoms of demon possession and its management including the use of exorcism is discussed and illustrations are given both from my own psychiatric practice and from the experience of others.

ABORTION — AN EXERCISE IN BIOMEDICAL ETHICS

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Following some general considerations, the paper will deal with attitudes toward induced abortion. One extreme is the view that the foetus has the status of a human being from the moment of conception, that is, absolute protection. The opposite extreme is that the foetus is in no way independent of the mother, thereby bestowing on the mother the absolute right to decide the fate of the foetus. Both views are analyzed and found inadequate. Although the absolute protection view has attractions for Christians, an analysis of the Roman Catholic position reveals its weaknesses as well as its strengths.

In attempting to develop an answer, a basic postulate is that the foetus represents a potential for human life from very early in development. This emphasis on the foetus as part of a process is worked out in terms of biblical constraints. It is argued that, to contemplate the foetus as if it were fully or responsibly human, is misleading. The foetus is an integral part of the human endeavour, but greater value should not be placed on it than on human life after birth.

Abortion presents a dilemma. There does not appear to be a biblical warrant for automatically classing it as murder, and yet it is an extremely serious action in that a potential human life is destroyed. The consequences of this for Christian couples are explored, in the light of the biblical demand for the exercise of human responsibility.

Circumstances in which abortion may be permissible are discussed. These include: danger to the physical health of the mother, danger to the mental health of the mother, rape, and therapeutic reasons encompassing genetic and chromosomal abnormalities.

SELF ORDERING TENDENCIES OF AMINO ACIDS IN POLYPEPTIDES

Randy Kok, Texas A&M University, College Station, TX 77843

The work of Steinman and Cole which proports to explain amino acid sequencing in protein based on relative dipeptide bond strengths will be examined. Using a computer program, the dipeptide bond frequencies of twenty-five proteins have been determined, including the ten proteins originally examined by Steinman and Cole. These are compared to the measured dipeptide bonding frequencies presented by Steinman and Cole. Statistical analysis of the correlations between dipeptide bond frequencies and actual sequences of amino acids will be discussed.

UNDERSTANDING STRESS

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Our "age of anxiety" brings challenge and frustration to many of us which is greatly upsetting to our emotional stability and physical health and is commonly called stress. Psychosomatic diseases are the evidence of the power of mental and emotional factors over the body. This power can also be beneficial and can be seen in the healing that is provided by the "hope model" of a good physician and his medicine, even though he be a "witch doctor." Some of the mechanisms are known whereby the mind can cause harmful changes in the function and structure of the body and include the cerebral cortex, the limbic structures of the brain, the autonomic nervous system and the endocrine system.

Some of our stresses derive from without such as the requirements of our jobs and families and some come from within, produced by our attitudes, motivation, personality and ideas. Many times we create needless stress for ourselves by overambition and overwork, sometimes due to a feeling of indispensibility; by procrastination; by need to prove our worth; by dishonesty with ourselves; and even by being a Christian. But when stress is unavoidable, it is important to reverse the harmful physical changes as soon as possible by "relaxing" or calming activities which can include physical exercise, massage, music, biofeedback, and meditation and prayer. Biofeedback as a new technique shows promise of great relief of the stress effects but needs further evaluation. For the Christian, a proper theology, and an understanding of the teachings of Christ concerning value systems and also a proper faith-trust relationship with a loving and caring God will greatly help in providing relief or protection against potential stressors.

THE ARGUMENT OF METHODOLOGY IN THE HUMAN SCIENCES

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Wherever a discipline has something to say about the nature of man or of man's world, that discipline speaks to issues which are of vital concern to the Christian faith. This paper does not attempt to document the existence of such issues, but to illustrate the ways we skirt going beyond the fact of the issues to areas of true integration.

Much of the discussion surrounding the integration of Christian faith and learning in the human sciences (psychology and sociology especially) centers on the questioned validity of behavioristic methodology. The human sciences are seen as employing this method almost exclusively. Many observers assume this both reflects and reinforces a naturalistic world view. Naturalism presents man as a predetermined machine, whose "freedom" is illusion and who is made in his own image. The Christian in the human sciences must - so the argument goes - reject behavioristic methodology as a valid way of gaining knowledge about man, his group activities, or his society.

This paper suggests that the categorical rejection of behavioristic methodology is not warranted. There is no one social theory, nor a specific methodology which can be defined as "Christian." Each of several methodologies (behaviorist, field, phenomemalist) can be employed to investigate aspects of human activity. The choice of method will be related to the assumed nature of the phenomenon studied, and the level of analysis.

The nature of the phenomenon and the variables appropriate to the respective levels of analysis are defined by the world view of the investigator. Questions of Christian integration, therefore, are not questions of methodologies employed but rather questions relating to world view (Monism, Christian Theism, or Dualism).

**A CRITICAL ERA FOR NORMATIVE ORGANIZATIONS:
EXTRAPOLATIONS FROM THE ROMAN CATHOLIC PRIESTHOOD**
Zondra Lindblade, Wheaton College, Wheaton, IL 60187

"Normative organizations" are those characterized by high commitment levels and identification of members with the organizational goals. Primary incentives for participation are not utilitarian (money), nor coercive (psychological or physical force). Incentives are provided in the form of community belonging, attachment to ethical and moral values which the organization represents, and meaning in activities directly related to these values.

The local church, Christian colleges, voluntary and professional religious organizations (as characterized by ASA) could each be characterized as normative organizations. One professional religious group, the Roman Catholic priesthood, has experienced severe membership loss over the last decade and a half. It appears that incentives of normative organizations are under attack from several different directions: there is a loss of confidence in traditional values, relativity is prized and loyalty is risky; the high rate of geographic mobility tends to create relationships which are transitory, "throw-away" and task-oriented, and the political nature of normative organizations has become dominant. As the weakening of normative incentives continues, utilitarian incentives offered by the organization are increased with subsequent destructive effects on the values structure and sense of belonging so prized by church, Christian college, and religious organizations.

The close examination of membership loss and related variables within the Catholic priesthood may provide thought-provoking data for re-examination of our own normative organizations. In research on the priesthood, the middle-aged participant experienced unique and unresolved stress with resulting negative effects on the vitality of the organization. Again, recognition of some of the stress factors may illuminate reasons for vitality loss within our normative organizations.

**FALLING INTO HOPELESSNESS: CAN BEHAVIORAL METHODS HELP
IN COPING WITH DEPRESSION?**

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Recent research indicates that behavioral treatment of depression (cognitive therapy) is as effective as drugs in alleviating depression (Beck, et al). If so, what methods can be used?

This paper will explore behavioral and biblical methods for aiding oneself and others to deal with mild depression, and present some indicators where professional referral may be necessary. Discussion and interchange time will be provided.

NATURAL THEOLOGY AND REVELATION

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Natural theology has often been seen as contradicting the Biblical view that revelation is required for a true knowledge of God. Nevertheless, the scriptures themselves support some of the main contentions of natural theology. A sketch of a general theory of psychological development is presented. In this theory it is argued that cognitive maturity — the full explication of this presuppositions of consciousness — necessarily ends in the acknowledgement of revelation. Natural theology requires theological revelation.

HUMAN FREEDOM WITH SCIENTIFIC DETERMINISM

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During the past few years there has been considerable discussion and controversy about Donald MacKay's resolution of the tension between scientific determinism and human freedom.^{1,2} His argument is subtle and has proved difficult for many to grasp.³

As a step toward making his reasoning more transparent, I have constructed some diagrams where the state of the brain is a point in a coordinate system where the coordinates represent the electrical condition of the brain neurons. A curve in this diagram, then, represents the condition of the brain as it changes with time (I assume for the sake of argument, with MacKay, that the brain behaves in a deterministic fashion). On such a diagram, an uninterrupted curve represents the brain state of the person being observed, P. An interrupted curve results when the observer O informs P of the state of his brain and tells P what he will do in the future. A short line in a new direction indicates that this information has changed the state of P's brain from its uninterrupted path. Finally, the line changes its direction again after P has decided whether he will believe O's prediction of P's future course of action. The method is illustrated by diagrams for several different situations where the information given to P by O results in different beliefs and courses of action by P.

1. Donald M. MacKay, The Clockwork Image (Inter-Varsity, 1974)
2. Donald M. MacKay, Human Science and Human Dignity (Inter-Varsity, 1979)
3. See, for example, the Appendix in Reference 1 and J. A. Cramer and Donald M. MacKay, Journal ASA 28, 123-127 (1976)

TELECYBERNETICS: TODAY'S CHALLENGE

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The term, "tele-cybernetics," has been introduced in the literature in the context of our apparently unwary arrival into our Age of Tele-communications, themselves improperly controlled:

1. An Epistle to Dr. Benjamin Franklin, 1975 (1974); and
2. Proceedings, 1977 International Conference on Cybernetics and Society, Inst. Elect./Electronic Engineers, pp. 26-32.

The present paper attempts to place the subject in a more extended historical perspective, one relating quite clearly why C. P. Snow's notion of "Two (antagonistic) Cultures" is a quite inappropriate metaphor for describing academia.

The contemporary pertinence of the paper has been emphasized by more recent publications in the relevant literature:

3. Editor Ellis Rubinstein's "Technology and Society" (Spectrum, January 1979: p. 81); and
4. Publisher John A. Meyer's editorial (Time, 12 March 1979).

The paper's presentation will make clear our requirement for telecybernetics, whether one defines that term in accordance with N. Wiener (tele-communications + (proper) tele-control) or in accordance with Ampere and Plato (political science in our Age of (improperly controlled) telecommunications). The conclusion of the paper: a proposed amendment (on tele-communications) to the Constitution of the United States of America.

AN EMPIRICAL COMPARISON OF EVANGELICAL CHRISTIANS AND OTHER PEOPLE

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Findings from a questionnaire survey on "Religion and Spiritual Well-Being" with 753 respondents in the USA and 309 in Sweden reveal interesting differences between evangelicals and others. Evangelicals are more likely to believe that they have spiritual well-being, that they have found the meaning of their lives, that their sins are forgiven, and that they have had a born-again experience. They attend church more often and are more likely to label themselves as active church members. They are less likely to try hard to keep religion separate from the rest of life, but they are not more likely than others to have been involved in political and charitable activities over the past year, except those which can be considered as "religious." The results raise significant questions pertinent to such topics as spirituality, evangelical social concern, and the "measurement" of such religious phenomena as "evangelicalism" and "spiritual well-being."

THE CHURCH AND THE FUTURE OF EDUCATION

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In the midst of what some are touting as a revival of evangelical educational effort, many questions could be raised about the overall effect of those endeavors. Are they productive of the kinds of true disciples of Jesus Christ who can be readily identified as the salt and light of the earth; or are we simply witnessing a great deal of educational activity with minimal discipleship effect? What are the needs, potentials, and opportunities for evangelical education in the Sunday School, the Day School, and higher education in the light of Biblical promises and current trends? One conclusion that can be reached is that we must seek to establish a more effective and Biblical view of the learning process and we must work for more creativity and overall effectiveness in and through our educational endeavors.

PLATONISM, THEOLOGY AND MODERN PHYSICS
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From the early days of Christianity, the Platonic tradition has exerted a strong influence, both for good and for ill, upon the development of theology. This is of importance today because developments in physics in this century seem to be quite congenial with the Platonic theory of forms, and this philosophy can be of some help for our understanding of the nature of science.

The following topics will be considered in this paper:

1. Physics can be described loosely as "Platonic perturbation theory." The physical world is a representation of mathematical pattern, and science continually develops better approximations to this pattern.
2. An appreciation of the Platonic character of modern science is of some importance for theology, and especially for our understanding of creation.
3. Christian theology must insist that any philosophical system remain the servant, rather than the master, of biblical concepts. The doctrine of the Incarnation is critical for the development of an understanding of science which is both faithful to scriptural concepts and able to comprehend modern developments in physics.

THE HUMAN SIDE OF SCIENTIFIC CREATIVITY
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A description is given of a one-hour weekly undergraduate seminar the author is giving at New Jersey Institute of Technology primarily to engineering students and science majors. The course is entitled The Human Side of Scientific Creativity and investigates the kinds of creativity which goes into scientific activities. Topics include creative scientific method-embedded in commitment and trust, the open-endedness of scientific truth (as a consequence of Godel's theorem), creativity as enhanced by novel stimuli, the importance of communication structures to scientific creativity; and finally, analytic and holistic modes of thought (left and right hemisphere thinking). Examples are taken from the history of science, covering Copernicus' heliocentric planetary model, Einstein's special and general theory of relativity, and Bohr's interpretation of the Wave-particle duality of modern quantum theory. Lastly, the perspective on scientific creativity maintained in the seminar contains many presuppositions, often tacitly held, that are either derivable from or certainly congenial to a Judiac-Christian world-view.

BOOK LEARNING: THE TEXTBOOK CONTROVERSY
Kenneth V. Olson, Univ. of Northern Colorado, Greeley, CO 80631

How have modern science textbooks developed to their present state? A discussion of some issues in textbooks including interrelations between science/society and values.

THE CHRISTIAN MIND
Evelina Orteza y Miranda, University of Calgary, Calgary, Alberta, Canada

It is commonplace to say that when someone becomes a Christian, then his mind is transformed from one which is non-Christian to one that is Christian. St. Paul, in Romans 12:2, puts it this way: "Do not be conformed to this world but be transformed

by the renewal of your mind..." In other words, it may be said of those who say that they are Christians that they also possess a Christian mind. But what constitutes a Christian mind? What does it mean to say that a Christian has a Christian mind? Is it identical to saying that a scientist has a scientific mind? This paper explores these questions.

The ambiguity of the term "mind" is first noted and an attempt to establish its central and necessary meaning/use is made. Comparison is made between the expressions "scientific mind" and "Christian mind" and their distinctions are noted. Finally, in answer to the question what constitutes a Christian mind and in an attempt to establish its central/necessary meaning/use, reference is made to the dialogue of Christ with the woman at the well (John 4:7-38). It is suggested that, ultimately, the Christian mind is patterned after the mind of Christ. The mind of Christ constitutes the necessary/central meaning/use of the expression "the Christian mind." Accepting this to be so, some implications are drawn which raise some difficulties to us who are Christians and who are at the same time engaged in the academic world.

COMPUTER ASSISTANCE PROGRAM (C.A.P.)
R. Waldo Roth, Taylor University, Upland, IN 46989

For several years now the Information Sciences Department at Taylor University has felt a need to challenge its students in computer science and systems analysis to recognize the needs and potential for both long term and short term use of this technology in international missions and other Christian organizations. This presentation will describe C.A.P., which has been organized to achieve this goal. Several current projects involving Taylor students and long term plans for future development will be discussed. Suggestions and ideas will be solicited from the audience as well.

SOME ASPECTS OF THE THEOLOGICAL BASIS OF MODERN SCIENCE
James Rynd, Biola College, La Mirada, CA 90638

Much has been written concerning the relationship of Biblical theology and the rise of modern science. Many authors* having noted the close correlation between the early scientists and their strong Christian commitment, have concluded that it was their Christian world view that served as the philosophical basis for the assumptions, methods and goals of science. The emphasis on post-reformation theological concepts as the sovereignty of God, the authority of Scriptures, the total depravity of man, the grace of God and the priesthood of believers are tied to such scientific principles as the empirical approach, model building, experimental verification and the unity of nature.

Several questions concerning the validity and implications of this model can be raised. The following questions will be discussed.

1. Realizing the inherent danger of stating a cause and effect relationship using a correlation, is it possible to independently verify these conclusions?
2. If a Christian world view did give rise to modern science why are present day scientists largely materialistic, egocentric and atheistic in their approach to science?
3. How is it that science has been used as the chief weapon in the attack of Christianity at the intellectual level? Has science become a Frankenstein's Monster to its creator?

4. In view of the ecological crisis, the atomic bomb and other ethical concerns attributed to science and technology, do we want their roots tied to a Christian world view?

* Such as R. Hooykaas, Religion and the Rise of Modern Science and E. M. Klaaren, Religious Origins of Modern Science.

**DETERMENT OF ALCOHOLISM BY DISULFIRAM (ANTABUSE):
PHYSIOLOGICAL, PSYCHOLOGICAL AND BIOCHEMICAL EFFECTS**

**Charles G. Sanny, College of Osteopathic Medicine & Surgery,
Des Moines, IA 50312**

Though the Scriptures do not advocate total abstinence from alcohol, the misuse of alcohol is strongly discouraged. Today, over 10 million individuals and their families are affected by alcohol abuse and alcoholism. A compound, disulfiram (trade name; Antabuse), has been used since the 1940's as a deterrent for alcoholism. After disulfiram treatment, the ingestion of minor amounts of ethanol can result in severe illness. The physiological effects of this "disulfiram-ethanol reaction" (DER) include blurred vision, nausea, vomiting, cardiovascular changes and, in rare instances, death. The psychological effects include fear, anxiety, and psychosis. The biochemical effects include changes in the normal metabolism of ethanol and possible changes in neurotransmitter metabolism.

During normal metabolism, ethanol is converted to acetaldehyde, in itself a toxic compound. Acetaldehyde is then converted to acetic acid by the enzyme aldehyde dehydrogenase. Disulfiram prevents acetaldehyde from becoming acetic acid by inactivating aldehyde dehydrogenase, thus, after the ingestion of alcohol, acetaldehyde levels increase in the body and the individual experiences the deleterious physiological effects of the DER. Disulfiram and its metabolites may contribute to the psychological and physiological effects of the DER by decreasing the synthesis of norepinephrine, a compound vital to nerve function.

Though disulfiram is not a deterrent of alcoholism in and of itself, it has been useful as an adjunct to a general program of therapy. The old strategy of disulfiram treatment based on aversion or fear is being replaced by treatment based on a positive relationship between the patient and the doctor.

A UNIQUE EXPOSITION OF GENESIS 1:1-10

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A scientist's view in relation to the theology of the creation account of Genesis may result in some conclusions that would dismay the theologian. The theologian, on the other hand, in studying the same subject, sometimes makes invalid observations in relation to science that causes a scientist to wince.

This paper presents a unique survey of the first ten verses of Genesis, using a simple, logical exegesis that emphasizes a literal interpretation of the passage that allows for the geological consensus that the earth is very old.

The author believes that this is likely the best answer for those who would seek to harmonize six literal days of creation with the concept of a very old earth and evidences of prehistoric life.

The author of this paper has had a small book printed titled God Created. It is expected that feedback from this presentation will help toward revising this book.

THE FEDERATION CHRISTIAN FELLOWSHIP

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The Federation of American Societies for Experimental Biology (FASEB) is an umbrella organization composed of six societies which meet annually at the same time and place. Dr. Walter R. Hearn, who attended these meetings regularly in the late 1950's, first had the idea of having a get-together for Christians during these week-long conventions. In 1959 or 1960 he and Dr. A. Kurt Weiss arranged a breakfast meeting for such a purpose. More than 30 individuals attended and Dr. Weiss spoke on Proverbs 16:3: "Commit thy work unto the Lord and thy thoughts shall be established."

Thereafter an evening Coffee-Fellowship has been held each year. More than 200 individuals have attended these meetings over the years. After prayer and Bible Reading, there is usually a lecture on a topic of spiritual concern, and this is followed by a warm informal fellowship over coffee or tea and cookies.

Since the 1960's, the Federation has published this function in the official program of the Societies. In 1973 when Lewis P. Bird of the Christian Medical Society was the speaker, the editor of Federation Proceedings requested an edited manuscript of his talk about "The Christian Medical Society" and this was published in Fed. Proc. 32:2086-7, 1973.

SCIENTIFIC TRUTH: IS IT TRANSIENT OR ENDURING?

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We recognize that most of the theoretical aspects of science which appear in the literature are transient or temporary, but the Christian has cause for confidence that many discovered scientific truths are enduring. Evidently these are discoveries of some of the actual principles of God's plans of the creation. If this is the case, then it is important for Christian men (people) of science to recognize these enduring truths, and not to be intimidated by the non-Christian scientific community which often tends to consider truth of every sort to be transient.

Some reasons for our confidence in man's ability to recognize enduring scientific truths concerning the natural world are: (1) The Scriptures teach that man (even unregenerate man) is "made in the image of God" (Gen. 9:6 etc.), with rationality which is a gift from God. Therefore this rationality can be valid for use in observing and interpreting God's creation. (2) Christ, during his ministry on earth, made several direct statements which affirmed to his hearers that man is capable of making reliable observations of the natural world, e.g., Matt. 7:9-10; 9:16-17; Lk. 12:54-56. (3) There are already many time-honored discoveries which give no prospect of being fundamentally altered. These include numerous physiological discoveries such as the functions of certain organs of the human body, made some hundreds of years ago. Also included in the list of time-honored discoveries are many physical principles, e.g., that liquid water can be converted into a gas which can then be reconverted into liquid water, and that iron is more dense than water. Such observations as these can be accepted as real and not deceptive because of our knowledge that God upholds an ordered and coherent universe with genuine cause-effect relationships.

If evangelical Christians fall to the temptation to regard all scientific truth as transient, they will miss many opportunities to help: (1) non-Christian scientists who frequently lack confidence in both natural and special revelation, and in God's provision for man to gain objective knowledge, and (2) fundamentalists who may have some of these same deficiencies of confidence, or have narrowed their conception of truth to where they are unwilling to recognize the value of scientific data.

PHYSICAL FITNESS AND THE COURSE OF LIFE Edmund R. Woodside, Pasadena, CA 91103

The matter of health science and physical fitness was of no small importance in the ancient world, as today. The influence has been extensive, directly or indirectly, physically or spiritually - or both. The Olympics lasted for centuries, to be revived in our day amidst much political wrangling and controversy. In the New Testament, Paul contended bodily exercise was profitable for a little while, intimating continuous necessity. The athletic field of his day provided him with graphic examples and vivid illustrations. In these he used no specialized term for the beginning of a race, rather stressed active participation during its progress. It took place in the stadium in pursuit of the prize. Striving was required. Agonizing in the Scripture always indicates exertion of strenuous effort, never passive endurance or suffering. These ancient races were for a perishable crown, a laurel wreath which in a few days decayed.

As for his body, Paul treated it roughly and led it into slavery. He did not wish to be rejected or disqualified. Here is a combination of the physical and spiritual. (I Cor. 9:24-27).

In the race, both ancient and modern, rules were set down. Cutting in front of a runner too soon was a violation and a reason for disqualification. The Galatians were running well. "Who has cut in that you should not obey the truth?" They were properly engaged in following the apostle's teaching. Someone cut in on them and broke their stride and they were losing out.

At the end of his life, Paul had fought the good fight, a term from athletic contests; the race course he had completed, and had kept the faith, descriptive of the compelling forces in his many years of Christian witness. The crown was laid up for him.

SPIRITUAL DEVELOPMENT FROM A PSYCHOLOGICAL PERSPECTIVE Paul D. Young, Houghton College, Houghton, NY 14744

The stage-development approach has been a popular one in the study of human growth and development. Jean Piaget is one leading example, fitting the development of cognitive information processing and problem solving abilities into a stage-developmental framework. Lawrence Kohlberg has done the same for the growth of moral reasoning, more recently extending his theory into adulthood. Kohlberg and others have also applied the stage-developmental model to the development of gender constancy.

Assuming that spiritual growth in an appropriate and practicable area of study for the developmental psychologist, the present paper presents some theory and research into the ways in which ideas of God and our relationship to Him change as we mature. Stages of this growth are outlined, and a Kohlberg-type test for the assessment of current stage is offered.

Ideas of God seen as characteristic of various stages of development include the Grandfather, the Landlord (C. S. Lewis), the Ancient Tutor, the Romantic Ideal and the Majestic King.