

- 4:00 PM **William E. Wagner:** "Institutional Review Boards"
(concurrent) **III B—Science Education**
(S. Seminar Rm.)
- 2:30 PM **Jeffrey K. Greenberg:** "Crisis in Science Education"
- 3:00 PM **J.E. Richardson:** "Now It's YOUR Business—The New Age"
III C—Origins (S. Seminar Rm.)
- 3:30 PM **Joseph H. Lechner:** "Radiohaloes: The Creator's Fingerprints?"
- 4:00 PM **Gerald Bergman:** "Physics of Time"
- 4:30– PM **Free Time & Checkout**
- 8:00– PM **Meetings for Scientific Disciplines**
(1) Geology Division (S. Seminar)
(2) Biologists (Porter)

ASA extends thanks to Program Chair, James Swanson, and Local Arrangements Committee, Robert Werking & Marvin Hinds, and to all those who have lent their support to this year's Annual Meeting.

Registration & Information in Science Hall lobby will be open:

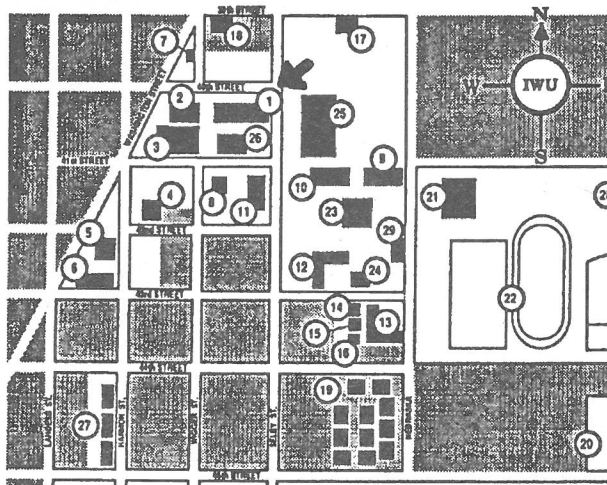
Friday:	2:00–6:00 PM 9:00–10:00 PM
Saturday:	10:30–11:30 AM 5:30–6:30 PM
Sunday:	8:00–9:00 AM dinnertime
Monday:	8:00–9:00 AM 1:00–2:00 PM

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 668
Ipswich, MA 01938



INDIANA WESLEYAN UNIVERSITY CAMPUS



ACADEMIC CENTERS	
1.	Science Hall
2.	McConn Auditorium
3.	Noggle Christian Ministries Center
4.	Goodman Library
5.	Administration Building
6.	Teter Hall
7.	Nursing Annex
8.	English Offices
HOUSING FACILITIES	
9.	Bowman Hall
10.	Shatford Hall
11.	Williams Hall
12.	Eastburn Apartments
13.	Phillippe Apartments
14.	Cartwright House
15.	Howlett House
16.	Bell House
17.	Goodman House
18.	Baldwin House
19.	College Manor
STUDENT SERVICE FACILITIES	
20.	Aquadome
21.	Physical Education Center
22.	Eastburn Athletic Fields
23.	Baldwin Center
24.	Counseling Center
25.	College Wesleyan Church
26.	Student Center
27.	Professional Education Center (LEAP)
28.	Maintenance Center
29.	Presidents House

1989 Theme:

The Science, Theology and Ethics of Human Intervention

The 44th Annual Meeting
of the

American Scientific Affiliation

August 4-7, 1989

Indiana Wesleyan
University
Marion, Indiana

44th Annual Meeting of the ASA
 August 4-7, 1989
 Indiana Wesleyan University
 Marion, Indiana

**"The Science, Theology & Ethics
 of Human Intervention"**

FRIDAY, AUGUST 4

2-6:00 PM **Registration** (Science Hall)
 7:00 PM **INTRODUCTION &
 KEYNOTE LECTURE**
 (Science Hall, Porter Auditorium)
Howard W. Jones, Jr., M.D.
 "Assisted Reproduction: Factors
 Influencing a Clinician's Ethical
 Decision."
 9:00 PM **Mixer** (Noggle Center)

SATURDAY, AUGUST 5

7-8:00 AM **Breakfast** (Baldwin Center)
 8:15-8:45 AM **Devotions** (Carter Chapel,
 Noggle Ctr.)
 9:00 AM **KEYNOTE RESPONSE** (Science Hall,
 Porter Auditorium)
James Swanson: "One Scientist's
 Ethical Dilemma"
 10:30-11:30 AM **Free Time**
 11:30-12:45 PM **Lunch** (Baldwin Center)
 1:00-4:00 PM **PLENARY SESSION** (Porter Aud.)
 1:00 PM **Donald W. Munro:** "Human
 Genetic Engineering"
 1:45 PM **Robert L. Herrmann:** "Gene
 Therapy"
 2:30 PM **Peter J. Vibert:** "Genetic
 Screening"
 4:30-5:30 PM **Annual Business Meeting**
 (Porter Auditorium)
 6:30 PM **Banquet Dinner** (Baldwin Center)
 7:15 PM **Presidential Address**
 (Stanley E. Lindquist)
 7:30-9:00 PM **Discussion Panel** (Baldwin Center)
 "Biomedical Ethics"—Howard W.
 Jones, Jr. & James Swanson

SUNDAY, AUGUST 6

8:00-9:30 AM **Breakfast** (Baldwin Center)
 10:00-11:00 AM **Worship Service** (Carter Chapel)
 11:30-12:45 PM **Lunch** (Baldwin Center)
 1:00-3:00 PM **SESSIONS I**
I A—Biomedical Ethics (Porter)
 1:00 PM **Stanley Rice:** "Limitations of
 Human Genetic Engineering"
 1:30 PM **Hessell Bouma, III:** "Breakthroughs
 & Ethical Issues in Human Gene
 Engineering"
 2:00 PM **William B. Monsma:** "The Abolition
 of Humanity"
 2:30 PM **Tomuo Hoshiko:** "Forbidden
 Knowledge"
 (concurrent) **I B—Origins** (Noggle Ctr.,
 S. Seminar Rm.)
 1:00 PM **Charles E. Hummel:** "Hermeneutics
 & Science"
 1:30 PM **David L. Wilcox:** "On Putting the
 Axe to the Roots"
 2:00 PM **Gordon C. Mills:** "Presuppositions
 of Science as Related to Origins"
 2:30 PM **Dallas E. Cain:** "Genesis I
 Paraphrase in Reality"
 3:00-3:30 PM **Break**
 3:30-5:30 PM **SESSIONS II**
II A—Biomedical Ethics (Porter)
 3:30 PM **Mary Jane Mills:** "Medicine in the
 Ancient World"
 4:00 PM **Edwin Yamauchi:** "Aphrodisiacs,
 Contraception, Abortion &
 Infanticide in Antiquity"
 4:30 PM **George L. Murphy:** "Chiasmic
 Cosmology as the Context for
 Bioethics"
 5:00 PM **Howard M. Ducharme:** "The
 Immorality of IVF & the
 Incarnation"
 (concurrent) **II B—Science Education**
 (S. Seminar Rm.)
 3:30 PM **John W. Haas, Jr.:** "Science &
 Faith in Western Europe"
 4:00 PM **Sherman P. Kanagy, II:** "The
 Appropriateness of Discussion of
 Alleged Miraculous Events in
 Institutions of Public Science
 Education"
 4:30 PM **Barbara R. Hoshiko:** "Course on
 the Spiritual Dimension of Nursing
 at a Secular University"

5:00 PM **George J. Jennings:** "Ecological
 Imperatives for Development
 Programs in the Middle East"
 6:00-7:30 PM **Dinner** (Baldwin Center)
 8:00- PM **DISCUSSION GROUPS** (see bulletin
 board for locations)
Gerald Bergman: "Human Rights
 & Origins"
Dallas E. Cain: "The Six Days"
Tomuo Hoshiko: "Abortion & the
 Beginning of Life"
Jeffrey K. Greenberg: "Growing
 Crisis in Science Education"
David O. Moberg: "Ethical &
 Socio-economic Dilemmas of the
 American Health Care System"
Edwin Yamauchi: "Archaeology
 & the Bible"
Kenneth V. Olson: "Science
 Education Commission Work"
Ken J. Dormer: "Ethics in
 Biomedical Research"
Davis A. Young: "A.C.G. Division
 Meeting"
Donald W. Munro: "Christian
 Approaches to Euthanasia"
Sherman P. Kanagy: "Discussion
 of Alleged Miraculous Events in
 Public Schls."

MONDAY, AUGUST 7

6:30-8:00 AM **Breakfast** (Baldwin Center)
 8:30-9:00 AM **Devotions** (Carter Chapel)
Free Time & Tours
 (a) Lilly Pharmaceuticals
 Research Laboratory:
 leaves 7:00 am
 (b) Conner Prairie (early
 19th-century recreation farm
 community)
 (c) Asherwood (environmental
 learning center)
 12:00-1:00 PM **Lunch** (Baldwin Center)
 2:30-4:30 PM **SESSIONS III**
III A—Biomedical Ethics (Porter)
 2:30 PM **James E. Nelson:** "Seeking the
 Human Face of Medicine"
 3:00 PM **H. Miriam Ross:** "The World's
 Children"
 3:30 PM **Barbara Hoshiko:** "How Patients &
 Families Can Potentiate
 Excellence in Nursing Care"

program continues 

ABSTRACTS

(listed alphabetically by author)

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THE PHYSICS OF TIME

Jerry Bergman, Archbold, Ohio

The paper reviews the various concepts of time, both from a scientific and philosophical orientation, and their bearing on the subject of origins. It was concluded that the historical philosophical position of Western culture has included several concepts of time. The major view is that time is a result of the Creation and is a limitation only of temporal existence. This tradition, was elaborated by St. Augustine and later thinkers. Time is often divided into psychological, empirical, and absolute time, and each of these positions are summarized. The difficulty of the absolute view of time relative to relativity theory are explored. Estimates of absolute time essentially examine current rates of physical change and, assuming that the rate found is consistent, extrapolate backwards. This is a difficult task that is not privy to replication.

The historical Christian view is that time is clearly a human limitation and that time cannot circumvent or impede God's will. As soon as a thought is conceived by Him, it is spoken of as not only begun, but completed because the conception of a thought by God is fully equivalent to the completion of the action. The problems of trying to "harmonize" the changing views of the universe as conceived by scientists with the theological views are elucidated relative to time. The time factor is crucial in that, given the essential possibility of a feat, a major difference between what mankind and God can achieve is the human limitation called time. Given enough time, a mountain of any size could be moved by humans.

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BREAKTHROUGHS AND ETHICAL ISSUES IN HUMAN GENETIC ENGINEERING

Hessel Bouma III, Grand Rapids, Michigan

Recent breakthroughs in the fields of molecular genetics and mammalian reproductive physiology have made it technically possible to re-design and design human beings. We can isolate specific genes, clone genes, synthesize genes or gene probes, insert genes from one organism to another (both intraspecies and interspecies), and we are embarking on an enormous project to sequence the entire human genome. These technological abilities contribute tremendously to our basic scientific knowledge of ourselves. With such knowledge comes enhanced powers: to diagnose, to treat (or not to treat), and to intervene (or not to intervene) in human genetic diseases or to select and enhance human characteristics. And with such powers come issues which require serious moral reflection by health care practitioners and laymen. Ought we to diagnose, to treat, to intervene in the lives of human beings in utero, in newborns, in children, and in adults? When and how ought these powers to be used? When ought these powers to be withheld? This paper reviews some of the recent technological breakthroughs and the powers we now have or anticipate possessing to re-design or design human beings, then examines some areas of ethical-theological concern. What does it mean to be faithful to God in medicine and human engineering? As image-bearers of God, what may we do to ourselves and to others without violating that image?

GENESIS ONE: PARAPHRASE IN REALITY

Dallas E. Cain, Scotia, New York

This exploration addresses two main problem areas with Creation in Genesis One: the time span, and the order of events. These problems stem from a common source. Our English versions of Genesis One still reflect their roots in the sixteenth century: they project, for today's use, a model of Creation born before the Scientific Revolution; they fail to clearly project the true ground-level perspective of the events in Genesis One. We are impelled to label our existing versions "Genesis One: Creation Model 1600 A.D." then, with hindsight being 20/20, we assay a "Paraphrase in Retrospect 1989."

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THE IMMORALITY OF IVF AND THE INCARNATION?

Howard D. Ducharme, Akron, Ohio

The Vatican position on IVF and surrogate motherhood is that all instances of them are immoral and ought to be illegal. I argue that if all instances are immoral, then God's action in bringing about the conception of Jesus must have been an immoral act as well. I identify all of the possible options that could have been employed by God, per the biology necessarily assumed in the doctrine of the incarnation. For example, God may have used Mary's egg and fertilized it by his "donor sperm," he may have created both a "donor egg" and "donor sperm" in Mary's womb, or he may have created an embryo in Mary's womb. The moral theology of these and the other possible options is evaluated with the conclusion that a consistent resolution can be forthcoming which justifies some particular instances of IVF as well as the traditional doctrine of the incarnation (per the Council of Chalcedon). Two overhead diagrams are used.

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CRISIS IN SCIENCE EDUCATION

Jeffrey Greenberg, Wheaton, Illinois

The current disaster of science education in the U.S. is widely acknowledged. Manifestations of this crisis appear throughout our school systems in various forms. Grossly under-qualified science teachers are commonplace evidence of the over 20,000 high school math and science faculty positions that remain unfilled. American high school students rank last (11th out of 11) in science skills among leading nations of the West and Asia. Cultivated fears of science and math drive college students away from these fields into business, literature, communications, political science, etc., which are conversely bursting at the seams with disciples. A bleak future is predicted for science in government, educational and private institutions, and industry.

Many are the contributors to the present educational situation. At the risk of overgeneralization, it can be said that the American Dream is an

over-riding factor. Here, almost everyone either goes to college or would if they could afford to. We must go because parents and society require it as a rite of passage leading to promised success. Most high schools and colleges function on the least common denominator principle. Consequently, quality is sacrificed for experience. Teachers are discouraged by poor salaries, lack of respect, and spoiled or socially misfit pupils. Schooling is a starting point of a vicious circle phenomenon that begs for a solution.

Various efforts can (must) be made in response to the crisis. These partial measures necessitate a reallocation of time and finances with a strong dose of volunteerism, and include:

1. Enhancing the public image of science.
2. Recruiting science majors from high schools and college freshmen.
3. Raising funds for scholarships, internships, and research.
4. Producing educational materials for curricular and public use.
5. Strengthening science teacher programs.
6. Nurturing and rewarding outstanding teachers.

Although science education affects all Americans, there are some aspects of distinctly evangelical concern. If American culture is at least passively anti-scientific, then the evangelical subculture is substantially more so. We must therefore work to influence the churches, church schools, and Christian media. Science education should be considered a significant mission field for Christians.

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SCIENCE AND FAITH IN WESTERN EUROPE: A PERSONAL VIEW

John W. Haas, Jr., Wenham, Massachusetts

America and England have long enjoyed a tradition of significant discussion on the interrelations between science and Christian thought. Today, there is a rich dialogue both at the philosophical level and at points where science and technology impact society. We may be less aware of an upsurge of interests in these questions in the non-english speaking lands of Western Europe. This has come about partly due to a waning of influence of theologies which would separate nature and grace and the impact of the reindustrialization of Western Europe after World War II. This paper will report some of the themes that are being addressed and the people and institutions who promote this discussion. There are similarities and some sharp differences among the various European lands and England and America over the topics discussed and the form in which discussion takes place. We need to develop more lines of communication with our European counterparts. This analysis is based on interviews with nationals in science and theology over the past three summers.

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GENE THERAPY FOR THE TREATMENT OF HUMAN GENETIC DISEASE

Robert L. Herrmann, Ipswich, Massachusetts

Research in molecular genetics has revealed the existence of over 4,000 genetic diseases, many with severe medical consequences. In the United States alone, more than 25 million individuals have a clinically significant level of heritable disease. More than 40% of pediatric patients are in this category. In addition, both cancer and AIDS have a strong genetic correlation.

Despite rapid progress in diagnostic techniques, there has been relatively little application to treatment at the bedside. Out of the 4,000 genetic diseases, we can effectively treat perhaps 20. Therefore, researchers have turned to the development of gene therapy techniques.

Initial efforts have been confined to two immunodeficiency diseases - adenosine deaminase (ADA) deficiency and purine nucleoside phosphorylase (PNP) deficiency - and Lesch-Nyhan syndrome, a deficiency of hypoxanthine-guanine phosphoribosyltransferase (HGPRT) which leads to severe central nervous system dysfunction. It has been generally agreed that only somatic cell gene therapy, where genetic material is inserted into a human being for the sole purpose of medically correcting a severe genetic defect in that patient, is at present acceptable to society. Attempts to correct a patient's reproductive cells (i.e. germ line gene therapy) or to alter or improve a "normal person" by gene manipulation (to enhance some characteristic or as part of a eugenics program) remain highly controversial.

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USING WORLD-VIEW AS CONTEXT FOR A COURSE ON THE SPIRITUAL DIMENSION OF NURSING AT A SECULAR UNIVERSITY

Barbara R. Hoshiko, Kenneth Hermann, and Shirley O. Wood
University Heights, Ohio

Modern nursing traces much of its early history to religious roots. It is not surprising, then, that even today in a secular university, a school of nursing still states in its philosophy that human beings are biological, psychological, social, and spiritual beings. This paper describes a state university experimental graduate course on "The Spiritual Aspects of Nursing." The first part of the course introduces the concept of world-view and students report on their interviews with persons who have different world-views than themselves. In the second part of the course students review and analyze various nursing theorists using the world-view framework. In the third part of the course, a model of the spiritual dimension of persons is introduced and then related to clinical nursing situations. In the fourth part of the course, students present seminars having to do with a selected topic in nursing which is related to the spiritual dimension. Student response has been extremely positive. In the context of today's pluralistic society, the world-view framework has provided one way to present the spiritual aspect of nursing in a clear and acceptable format. Could that framework function similarly in teaching other disciplines?

THOUGHTS ON HOW PATIENTS AND FAMILIES CAN POTENTIATE
EXCELLENCE IN THE NURSING CARE THEY RECEIVE

Barbara R. Hoshiko, University Heights, Ohio

Concern for our loved ones and ourselves is coupled with general concern for public well-being as we interface with the complex health delivery system of this country. In one specific arena, for instance, how can patients expect to receive excellent nursing care with the nursing shortage and the rising acuity level of patient conditions? Although needed campaigns are underway not only to recruit and retain more nurses, but also to monitor and enhance quality of care, an additional approach is possible. This paper discusses a way to enable patients and/or their families to work synergistically with the nurses who care for them. The strategy is to enable action by raising patient and family awareness of 1) the role of the nurse as an independent professional collaborating within the health team, 2) common hindrances that may block nurses from performing their role, 3) practical suggestions of ways patients and/or their families can potentiate excellence of nursing care in an atmosphere of collaboration.

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FORBIDDEN KNOWLEDGE - ARE THERE AREAS CLOSED TO
SCIENTIFIC RESEARCH, WHAT ARE THEY AND WHY?

T. Hoshiko, University Heights, Ohio

The universal abhorrence of the Nazi's WWII medical research shows that some areas are closed to scientific investigation, not because they lie outside the legitimate domain of natural science but because they transgress ethical, legal, or consequential limits. Some areas are closed because of the methods required but others because of content. Societal perceptions have changed. Technology has opened new questions such as the legitimacy of experimentation using fetal tissue, interspecific transfer of human genes, etc. Although the Constitution does not guarantee a fundamental right to conduct research, it is the Constitution which ultimately determines the legality of strictures on scientific activity and its practical application. First Amendment rights to free speech and free press and the Fourteenth Amendment right to due process have been invoked in support of a right to carry out scientific investigation. Legislation controlling of the use of radioactive materials, drugs, toxic materials, pathogenic organisms, etc., is based upon environmental, public health and national security reasons. Denial of government funding has also been used to restrict research. Any legislation or administrative funding decisions shown to be based upon religious doctrine rather than upon a "general moral abhorrence," will be challenged under the First Amendment Establishment Clause. Thus, biblical precepts must be shown to illuminate rather than dictate the public interest. Education of the public and mobilization of public opinion remains a key ingredient in delineating areas of questionable investigation. The task facing ASA and its Commission on Bioethics is a formidable one!

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HERMENEUTICS AND SCIENCE
INTERPRETING THE BOOKS OF SCRIPTURE AND NATURE

Charles E. Hummel, Grafton, Massachusetts

The widespread success of modern science has achieved its supremacy in the western world. In many quarters the scientific method has been touted as the sole valid way to explain not only the natural world but also that of society; all human activity and writing are to be evaluated by its criteria. No wonder that many Christians try to make the Bible "scientifically respectable" in the hope that it will thereby gain a hearing.

Galileo promoted the metaphor of the "two books of God," who is known by nature in his works and by Scripture in his words. He affirmed that the two, when properly understood, can never contradict each other since they are expressed in different languages for different purposes. Recent papers, however, have noted parallels between scientific method explaining the phenomena of nature and theological method interpreting the literature of Scripture. To what extent do biblical doctrines resemble or have the status of scientific theories as explanatory models?

Recently several German scholars have debated the basic issue whether the hermeneutical disciplines (scriptural exegesis, literary criticism, jurisprudence, etc.) are different in some way from the natural sciences. Are those interpretations, like scientific hypotheses, decidably true or false?

This paper examines the methods of science and theology, considers a resolution of opposing answers to the above question and suggests implications for understanding the status of scientific hypotheses and biblical doctrines.

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ECOLOGICAL IMPERATIVES FOR DEVELOPMENT PROGRAMS IN THE MIDDLE EAST

George Jennings, Le Mars, Iowa

The ASA invites its members to tour several East African and Middle Eastern cities, following the 1990 annual meeting, to dialogue with scientists there about viable programs for regional development where manifold needs are poignantly evident in today's media headlines.

Anticipating this tour, we suggest that factors in ecological disruption herein proposed account for the historical decline/stagnation of cultural achievement with depopulation in the Middle East, especially during the Ottoman Empire. The theory of progressive dessication, with deforestation and edaphic exhaustion, advanced by environmental determinists is held to be inadequate as a major explanation for the over-all deterioration of the region in the past.

Rather, the view herein proposed is that the decline in sociocultural systems and achievement is the consequence of political and economic imperialism, instability, mass atrocities bordering on genocide, and endemic wars.

Thus, our plea is for peace and ecological sensitivity by scientists with restoration in developmental programs of delicate ecological balances in this vast arid/semiarid region. This ecological approach for improvement must include demographic factors: urbanization, family size, health care, dietary correction, and the removal of illiteracy -- by education -- for all people.

THE APPROPRIATENESS OF DISCUSSION OF
ALLEGED MIRACULOUS EVENTS IN INSTITUTIONS
OF PUBLIC SCIENCE EDUCATION

Sherman P. Kanagy, II, Westville, Indiana

The question of the place of discussions of supernatural or miraculous events in public science education has been raised repeatedly over the last several years. It is argued here that although such discussions often are inappropriate, there are some situations in which they could have a proper place in science education. In particular, it is argued that certain non-metaphysical claims that are inherently important to various religious sects are subject to scientific test and thus have a place in any forum of scientific discourse.

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RADIOHALOES: THE CREATOR'S FINGERPRINTS?

Joseph H. Lechner, Mount Vernon, Ohio

Pleiochroic haloes are microscopic discolorations that occur within certain minerals. They result from the alpha decay of naturally radioactive isotopes. Since halo diameter is quantitatively related to alpha-particle energy, a radiohalo can often be attributed to the decay of a specific isotope.

Radiohaloes, which apparently were formed by isotopes of polonium, occur naturally in biotite and other minerals. These haloes have been cited as evidence, both for sudden (six 24 - hour day) creation, and also for a young (6000 year) earth (R. V. Gentry, Creation's Tiny Mystery, 1986: Earth Science Associates, Knoxville, TN)). If the haloes are correctly attributable to 214-Po or 218-Po, then they would constitute strong evidence for sudden crystallization, since the halflives of these isotopes are extremely short (164 microseconds and 3.05 minutes, respectively). However, indeed, the presence of 238-U haloes in the same specimens strongly suggests a minimum age in the tens of millions of years.

the physical basis for radiohalo formation will be demonstrated using a computer simulation. Portions of a videotaped lecture by R. V. Gentry will be presented for discussion.

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THE EMOTIONAL EFFECTS OF INTERVENTION:
FACTORS INVOLVED IN ENCOURAGING BEHAVIORAL CHANGE

Stanley Lindquist, Fresno, California

The recent developments on cognition as being the primary factor in behavioral change has tended to cause an emphasis on the objective aspects of life to the neglect of consideration of the emotional aspects.

At the same time, interestingly, this emphasis has caused additional research to be done on how behavior has been strongly affected by emotional as well as the cognitive processes. In order to understand the more complex picture, it is necessary to include emotional factors as well as the cognitive ones.

Understanding the cognitive and emotional aspects of Christian Faith may be enhanced by recognition of these factors.

PRESUPPOSITIONS OF SCIENCE AS RELATED TO ORIGINS

Gordon C. Mills, Galveston, Texas

Throughout my career as a scientist, I have been called back repeatedly to examine presuppositions of science and I have tried periodically to expose students to this same type of reassessment of the foundations of science. I remember quotations from Hans Krebs, the Nobel prize winning biochemist, "hypotheses must not move very far from the facts" and "evolution is based upon acceptance by faith of fundamental presuppositions". A basic presupposition that appears to underlie much scientific research related to origins follows: "That everything can be explained in terms of natural processes." Monod, in his book Chance and Necessity, expands on this theme. Kerkut, in Implications of Evolution, indicates the significance of this presupposition and defines it more clearly. Do recent findings in molecular biology and biochemistry support this view of the role of chance, or do they demonstrate a need for postulating an "intelligence cause?" In my talk, I will try to present evidence that will help us evaluate the questions posed above. I believe you will see that chance alone cannot provide a viable scientific explanation for the origin of the tremendous complexity of genetic information we see displayed in the genes and proteins of even the simplest organisms.

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MEDICINE IN THE ANCIENT WORLD

Mary Jane Mills, Galveston, Texas

When people today think of ancient medical practice, they generally think of charms, incantations, sacrifices and prayers. However, there have always been physicians, though in many cases the physician was allied with religion. Egyptian medicine was thought to be the best by many ancient writers. The Egyptians certainly knew a fair amount of anatomy from their mummification procedure, but strictly speaking, the process of mummification was kept a secret by the very small select group that was allowed to learn the ancient tradition. But from ancient times Egyptian medicine was allied with religion. If the prescribed medicine didn't work, it was because the gods didn't wish it. Actually, most illnesses were thought to be caused by the direct action of the gods. Therefore, the person must offer sacrifices to placate the gods.

The practice of medicine in the Near East (Sumer, Babylon, etc) started out as a separate profession. The physician was known as the ASU. The first remedies came from ancient Sumer. Most of the early prescriptions use beer in making poultices for external use and beer was also the vehicle for medicines given internally. The early texts do not have any references to the religious person known as the ASIPU (priest, exorcist, or talisman maker). The code of Hammurabi (roughly 1800 B.C.E.) lists prices for the physicians' treatment of the various segments of the population and also the penalties if the treatment causes death or permanent disability to the patient.

Those basic ideas remained until the second half of the first millennium B.C. At that time a shift can be observed. The physician (ASU) loses importance as the experts in divination, incantation, etc. (ASIPU) become dominant. From the ASIPU came the ideas we associate with ancient medicine. All illnesses were the result of having displeased the gods. This is apparent even in Judaism where most of those who were ill required ritual cleansing prior to admission to the House of God. For many centuries, this approach dominated medicine and medical ethics. The physician was still there, but he had lost this power to control the practice of medicine.

THE ABOLITION OF HUMANITY

William B. Monsma, Minneapolis, Minnesota

In 1947 a book by C. S. Lewis appeared with the title The Abolition of Man, based on a series of lectures at the University of Durham. In these lectures he considered the debunking of values as being merely subjective feelings, a practice common among the intellectual leadership of western society. When scientists gain the power to shape the future of humanity, what will guide them? When "I ought" has been dismissed, all that is left is "I want." The result is likely to be the abolition of humanity. After four decades, the issues addressed in this book are all the more urgent.

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CHRISTIAN PERSPECTIVES ON HUMAN GENETIC ENGINEERING

Donald W. Munro, Houghton, New York

There is a wide divergence of opinion in the Christian community about whether the potentials within genetic engineering for mankind are good or evil or a mixture of both. Partly, it is a combination of an individual's attitude toward technology, medicine, and how God deals with people.

It will be the purpose of this paper to review the major statements of some of those who claim to speak as Christians or for Christians on this issue and relate their ideas and underlying attitudes to generally accepted ethical and biological perspectives. Then I wish to review the promises and dangers inherent in proceeding to implement the technology.

Finally, I will elaborate on my own conclusions on a Christian attitude toward technology, the role of medicine and how God deals with us in the light of the potentials of genetic engineering.

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CHIASMIC COSMOLOGY AS THE CONTEXT FOR BIOETHICS

George L. Murphy, Tallmadge, Ohio

Christian ethics has often been presented in terms of a set of rules which must be adhered to. While rules (and pre-eminently the Ten Commandments) have their place, this approach to ethics has its limitations. When new situations arise, as they have with the advance of bio-medical technology, it is not always easy to see how old rules are to be applied.

Here we consider bioethical questions in the context of chiasmic cosmology, which is the attempt to view the universe in terms of Luther's theology of the Cross. God's work is characterically done under the appearance of weakness, and Christians are called to be people of the Cross. Passages like II Cor. 12:9 make it clear that the Cross is not an isolated event, but is the central and typical way of God's dealing with the world.

We first present a sketch of chiasmic cosmology and of the relationship between this approach to bioethics and other approaches. Then we will consider several aspects of the theology of the Cross: God's care for (and identification with) the helpless, God's exercise of dominion, the foolishness of God, and the hiddenness of God's work. In light of these ideas, we will then look at abortion, organ transplants, "artificial" prolongation of life, and the concept of "quality of life" as representative issues of bioethics.

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SEEKING THE HUMAN FACE OF MEDICINE

James E. Nelson, Blue Rapids, Kansas

The ethical issues surrounding bio-medical technology are quickly multiplying, forcing us to make new and ever more difficult ethical decisions. But this ethical conversation is becoming ever more difficult because the human face of medicine has been hidden behind a sterile mask which fundamentally changes the nature of the ethical discussion. The human dimension of medicine has been eroded for a variety of reasons; this discussion will be limited to three of these reasons: the sterility and alien character of hospitals, the red tape and increasing complexity of medical insurance and medicare, and the increasingly technical nature of medicine itself.

From a pragmatic perspective, we must distinguish between two types of ethical conversation: inter-relational and intra-relational ethics. Inter-relational ethics talks about "us" and since the object of discussion is familiar, a certain amount of ambiguity and withholding of judgment are allowed. Intra-relational ethics talks about "them" and because the object of discussion is strange or foreign, little ambiguity and withholding of judgment are allowed.

Because the medical community's human face is hidden behind the sterile mask of modern medicine, proper ethical discussion is skewed, putting modern medicine in an ethical fog. An urgent and primary task of the medical community (in the broadest sense) is to remove the mask, allowing the general public to see medicine's human face. This is the first step to putting bio-medical ethical discussion back into the inter-relational realm and thus putting the proper components of ambiguity and withholding of judgment back into their proper place.

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THE LIMITATIONS OF HUMAN GENETIC ENGINEERING AND THE FAILURE OF EUGENICS

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Many laymen fear that genetic engineering can and will be used to produce genetically altered humans possessing "superior" characteristics chosen by a scientific or economic elite -- that is, that it will be used in a revival of eugenics. Certainly technologies of the past and present have been used for the benefit of elite groups and against the interests of humanity in general.

However, genetic engineering of humans is unlikely to be used in this manner because the complexity of human gene expression will make it too difficult. Very few human characteristics (the standard textbook examples such as eye color, and specific genetic disorders such as phenylketonuria, sickle-cell

anemia, and hemophilia) can be traced directly and easily to their genetic causes. Most human characteristics that would presumably be of interest to eugenicists (such as intelligence, strength, fine motor skill) result not only from extremely complex interactions among many genes (both epistatic and pleiotropic) but also from their interaction with past environmental conditions and present environmental stimuli. Such complexity will probably prevent the genetic bases of complex human characteristics from being deciphered.

Eugenics has failed in the past. Craniometricians such as Broca and Le Bon tried and failed to prove that people with larger brains were smarter; Lombroso's "criminal anthropology", which tried to predict criminal behavior from the identification of apelike characteristics of skulls, failed; and racist theories such as those of J.L.H. Down failed. The heritable genetic variability among individuals for intelligence has not been proven to be significantly greater than zero. Human genetic engineering might help eliminate specific genetic defects, but cannot succeed as a revival of eugenics simply by dint of superior technology.

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NOW IT'S YOUR BUSINESS - THE NEW AGE

J. E. Richardson, Acton, Massachusetts

The New Age has recently received popular exposure most visibly through media publicity of Shirley MacClaine. However, those familiar with the movement realize that New Age ideas are permeating other segments of society including science, medicine, and education to name only a few. The author discovered that these ideas were actively penetrating the world of business - even within his own company and indeed his own department. The paper focuses on the author's response to this situation.

The paper presents a brief introduction to the recent emergence of the New Age, the historical lineage, and the religious foundation of New Age thought. Specifically, it deals with:

- the author's understanding of the New Age in business,
- his first-hand experience with New Age seminars masking as business & management training,
- an analysis of the dangers of this thought to the goals of business in general,
- his current attempts at a positive, pro-active dealing with the issues raised,
- and his suggestions on how Christians, within the context of their own disciplines, can constructively provide the "transformations" which the New Age promises

In this confrontation, the author seeks to glorify the personal, creator God who reveals Himself in the Judeo-Christian scriptures and in the person of Jesus Christ.

THE WORLD'S CHILDREN: TREASURE OR TRAGEDY?

H. Miriam Ross, Wolfville, Nova Scotia, Canada

Carefree innocence, joy-filled laughter, boundless energy are the images which often flash into consciousness when we hear the words "child" and "childhood." We speak approvingly of immunization of millions of children against infectious diseases, of widespread use of oral rehydration therapy, of enactment of humane laws against child labour. At the United Nations, Secretary-General Perez De Cuellar claims that a "child survival revolution has begun to spread across the world."

Yet UNICEF reports that in 1988, 123 million children died in Asia, Africa, and Latin America. Millions of others were brain-damaged, blinded, and wasted by malnutrition, disease, and poor sanitation. Amnesty International documents illegal detention of children in prisons, of rape and torture of youthful victims, of abandonment or "disappearance" or forced conscription into the military of hundreds of thousands of children. The results of Third World debt load, drug trade, famine and war fall heavily upon the world's children.

Christ welcomed little children and blessed them (Matt. 19:13); he pronounced dire retribution upon those who harmed "these little ones" (Matt. 18:6). How can we fulfill our personal responsibility toward children within our families and our community? What are our obligations to the world's children? By what means can we effectively combat those cultural values and social structures which degrade and destroy children? Will the world's children be tragedy or treasure?

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GENETIC SCREENING: WHAT SHOULD WE DO WITH WHAT WE LEARN?

Peter J. Vibert, Waltham, Massachusetts

Our ability to diagnose genetic disease is growing rapidly. Research groups in academic, clinical and biotechnology centers have recently located the defective genes, or marker genes closely linked to them, for a number of serious conditions. Screening for Huntington's chorea, muscular dystrophy and cystic fibrosis, in advance of their clinical manifestation, is now available

to families at risk. Many more complex genetic defects, as well as predispositions to certain diseases will soon be detectable. Government funding for the "Human Genome Project" will greatly increase the scope of these efforts over the next decade. At the same time, new methods for evaluating the genetic and developmental status of the fetus are being developed.

Some observers predict that how we handle this new genetic information will pose one of the major ethical dilemmas of the next 15 years. Guidelines for the use of screening results have yet to be developed, but issues regarding confidentiality and the provision of counseling and support services will have to be addressed.

INSTITUTIONAL REVIEW BOARDS
THEIR GROWTH AND DEVELOPMENT

William E. Wagner, Jr., Basking Ridge, New Jersey

The development of new diagnostic and therapeutic procedures has increased concern for the welfare of human subjects. Experiments, some of which have provided valuable information, were performed on patients without their knowledge or consent. As so often happens, some investigators were better able to see ethical lapses in the work of others than in their own. In an effort to protect subjects and patients, the Department of Health and Human Services promulgated rules for investigators funded by the National Institutes of Health, and these were later adopted by the Food and Drug Administration for research done during the development of new pharmaceutical products. Each protocol must be reviewed by an Institutional Review Board, which insures that the contemplated study is sound, its objective consequential, and that subjects are protected from pain and suffering. The IRB carefully reviews the consent form which the subject reviews and signs before entering a study. Since most normal subjects do not stand to benefit from the study, they must not be placed at extra risk. The development of the IRB concept, the changes that have taken place because some of the early rules did not work, and the benefits that IRB's have provided will be discussed with special reference to an individual IRB which has been reviewing studies done in a small clinical pharmacology unit since 1970.

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ON PUTTING THE AX TO THE ROOTS:
WHAT ARE THE CRITICAL ISSUES IN THE EVOLUTION/CREATION DEBATE?

David L. Wilcox, St. Davids, Pennsylvania

My initial premis is that the present methods of apologetics used in the debate over evolution and creation reinforces a non-Biblical view of the Creator, the idea of His usual absence. This non-Theistic assumption is not only unscriptural, but it is self-defeating. The source of this convention was the assumptions made by the scientific apologists of the nineteenth century. We should instead state as our explicit apologetic position the moment by moment governance of nature by God. The attacks which will be mounted by the "autonomous nature" crowd can all be shown to be self-contradictory. These include: the idea of Divine caprice, science and religion mixed, the idea of historical contingency, the need of a mechanical model, the problem of natural evil and the logic of the Blind Clockmaker. On the other hand, given a Theistic universe, at least 3 sorts of effective attacks can be made on the idea of an "autonomous process of self-transformation." These include: global coherance of reality, the likelihood of autonomous form transitions and the nature of self-referencing systems. I conclude that such a stance is not just possible, but is required of us.

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APHRODISIACS, CONTRACEPTION, ABORTION & INFANTICIDE
IN ANTIQUITY

Edwin Yamauchi, Oxford, Ohio

Though the Bible does not address such topics directly or in detail, extrabiblical sources shed light on the attitude of ancient cultures to various aspects of sex and procreation, such as the use of aphrodisiacs, and the practices of abortion, contraception, and infanticide.

Aphrodisiacs are substances which are believed to arouse sexual passions. The Egyptians, Romans, and even the Jewish rabbis believed in the efficacy of a variety of plant and animal substances as aphrodisiacs. Many of these were used in the widespread practice of erotic magic.

We do have many prescriptions for contraception from Egyptian papyri and classical texts. The Stoic emphasis on intercourse for the sake of procreation was adopted by Augustine. This is a doctrine which is now the basis for the Catholic opposition to artificial contraception.

The practice of abortion is widely attested in Old Testament times by the Mesopotamian law codes, and in New Testament times by classical sources. Most ancients, even Ovid, condemned abortion. Jewish rabbis allowed therapeutic abortions. Some Stoics did maintain that the fetus was but part of the mother's body and that its life began only with its first breath.

The Spartans systematically exposed weak and deformed babies as they needed strong men for their army. Plato in his ideal state, the Republic, prescribed the disposal of defective babies. Hellenistic inscriptions clearly indicate that females were killed more frequently than males. Roman law and such philosophers as Seneca, Paul's contemporary, also regarded the infanticide of abnormal babies as the norm.

The development of Christian attitudes toward birth, infants, and children demonstrate the revolutionary impact of the message of the gospel.