18. Holiday Inn ($19 for a couple); Conley's Motor Inn ($16 for a couple); Beaver Valley Motel ($14 for a couple). All of these have as addresses: Highway 18, Beaver Falls, PA 15010.

FIELD TRIPS
Wednesday afternoon, August 22, from 1:00-5:00, two trips are planned: (a) Shippingport Atomic Power Station on the Ohio River at Shippingport. (b) Old Economy, a 19th century utopian community reconstructed to depict basic features of this socioreligious way of life. In addition, with special features for ladies, a tour of historic and cultural features of Allegheny County (metropolitan Pittsburgh) at a time to be arranged according to interest and convenience.

MAIL FOR DELEGATES
It should be addressed to: Long distance calls
Delegate’s name to:
ASA Annual Meeting (412) 846-5100
Geneva College
Beaver Falls, PA 15010

INFORMATION about the American Scientific Affiliation can be obtained at the literature table at the Meeting or by writing to the national office at:
American Scientific Affiliation
5 Douglas Avenue
Elgin, Illinois 60120

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Professor of Chemistry
Gordon College

OFFICIAL PROGRAM
Twenty-eighth 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 to Jesus Christ as Lord and Savior and to a scientific understanding of the World.

AUGUST 20-23, 1973
GENEVA COLLEGE
Beaver Falls, Pennsylvania
CONVENTION COMMITTEE

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Professor of Anthropology
Geneva College
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THE OBJECTIVES OF THE AMERICAN SCIENTIFIC AFFILIATION:

"1) To investigate any area relating Christian faith and science.

2) To make known the results of such investigations for comment and criticism by the Christian community and by the scientific community."

—Article I of ASA Constitution

FINAL PROGRAM
AMERICAN SCIENTIFIC AFFILIATION
ANNUAL MEETING

Meeting Theme: CREATION, EVOLUTION AND MOLECULAR BIOLOGY

MONDAY, AUGUST 20

2:00-5:00 p.m. Registration
6:00 p.m. Dinner
7:30 p.m. Welcome and Introductions
Opening Address: "Creation and/or Evolution?" David L. Willis, Oregon State University
Fellowship Hour

TUESDAY, AUGUST 21

8:00 a.m. 7:30 a.m. Breakfast
8:30 a.m. Devotions
Late Registrations, etc.

Morning Session: Implications of Molecular Biology for Creation and Evolution

9:30 a.m. "The Genetic Code: Its Universality and a Theoretical Framework for its Origin"
Robert L. Herrmann, Boston University School of Medicine.

Break

11:00 a.m. "Molecular Biology—Proteins"
Wayne F. Frair, The King's College

12:00 p.m. Lunch — Section Reps

Afternoon Session: Reconstructing the Past

1:30 p.m. "Life in the Pre-Cambrian: Implications for the Creation of Life"
Frank Roberts, Delaware County Christian School

2:15 p.m. "Paleontological Evidence and Organic Evolution: The Transitional Fossils"
Roger J. Cuffey, Pennsylvania State University

3:00 p.m. Break

3:30 p.m. "The Use of non-radiometric Evidences for Age"
Daniel E. Wonderly, Grace College

4:15 p.m. Business Meeting and Report of Executive Secretary

Dinner

Evening Session

7:30 p.m. "Simple Exegesis and Biological Conflict"
Herman J. Eckelmann, Minister, Research Associate, Cornell Univ. Space Center

8:30 p.m. Group Sessions (small groups and discussion leaders)

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WEDNESDAY, AUGUST 22
7:30 a.m. Breakfast
8:30 a.m. Devotions
Morning Session: Creation and Evolution: World Views, or Models?
9:00 a.m. "Some Social and Philosophical Implications of Modern Evolutionary Theory for Creationists and Evolutionists"
Donald W. Munro, Houghton College
9:45 a.m. "Biogenesis: Paradigm and Presupposition"
John W. Haas, Gordon College
10:30 a.m. Break
11:00 a.m. "The Origin of Life: A Fresh Look at What the Bible Reveals"
S. Hugh Peine, Houghton College
11:30 a.m. "Evolution--A Legitimate Model"
Calvin D. Freeman, Cleveland State University
12:00 p.m. Lunch
Afternoon: Field Trips and Recreation
6:00 p.m. Annual Banquet
Speaker: Edmund Clowney, President, Westminster Theological Seminary. "The Future of Hope"

THURSDAY, AUGUST 23
8:00 a.m. Breakfast
8:30 a.m. Devotions
Morning and Afternoon Sessions: Educational Dimensions of the Topic
9:00 a.m. "Origins of, and in, California Science Textbooks"
Robert B. Fischer, California State College at Dominguez Hills
10:15 a.m. Break
10:45 a.m. CRM Film: "The Origin and Evolution of Life"
11:20 a.m. Panel Reaction to film
12:00 p.m. Lunch
1:30 p.m. "Christian Education and Evolution"
Symposium arranged by Albert J. Smith, Wheaton College
3:00 p.m. Break
3:30 p.m. Symposium continued
4:00 p.m. Closing remarks by A.S.A. President, John A. McIntyre, Texas A & M University

ABSTRACTS OF PAPERS
CREATION AND/OR EVOLUTION?
David L. Willis, Oregon State University
An attempt to explore various "harmonies" of the Genesis record of creation and the contemporary scientific understanding of the origin and development of life is made. Attention is given to the actual Genesis statements and range of key word meanings in distinction from that which is commonly read into the record from a conservative Protestant viewpoint. The apparent purpose(s) of the Genesis creation record is examined. Neo-Darwinism views and the reductionist tendencies of Molecular Biology are compared and contrasted with the range of possible or likely interpretation of the biblical record of creation. Three challenges to Neo-Darwinism are briefly explored in order to emphasize the tentativeness of scientific thought. It is concluded that a Christian and scientific world view can encompass aspects of both traditional "creationists" and contemporary evolutionary views.

THE GENETIC CODE - ITS UNIVERSALITY AND A THEORETICAL FRAMEWORK FOR ITS ORIGIN
Robert L. Herrmann, Boston University School of Medicine
The beginning of the modern molecular approach to the genetic code is marked by the proposal of Watson and Crick, in 1953, of double-helical DNA, a polynucleotide molecule. Experiments in 1960 indicated the transcription of the DNA sequence of nucleotides into a second polynucleotide, messenger RNA. Nirenberg and Matthaei, using synthetic RNA molecules, found that the code signal for the insertion of a given amino acid into a protein structure was a sequence of three nucleotide units of the polynucleotide. With the discovery of transfer RNA, the theory of assigning a codon to a specific amino acid was proposed. The data of experiments on bacteria, intermediate forms and mammals, though incomplete, has led to the general conclusion that the genetic code is universal. The protein-synthetic mechanisms in prokaryotic and eukaryotic systems likewise, appear to be quite similar.

One of the implications of a universal code is that there was indeed a single precursor of all living things, a primitive system capable of replication and information transfer from which all present living forms developed. Quastler, in his "Emergence of Biological Organization", argues that because the probability for survival of the first polynucleotide chain is greater than later arrivals and subsequent interactions greater than duplicate synthesis, the first chain becomes the progenitor of a unique polynucleotide system made up of the original and its "sister" chain. With Quastler's argument, evolutionary principles of selection and competition can be applied at the chemical levels. The informational content of a living system may have arisen, in its simplest form, from an apparently random design of the nucleotides incorporated into a polynucleotide polymer. With the data on the universality of the code and a theoretical framework for its
origin, the description of life's origins in a purely mechanistic sense would appear to lie within the grasp of modern molecular biology.

The statement above should not lead to any feeling by the scientist that his explanation of origins excludes other explanations—e.g., a theological one. The Scriptural view of origins places its primary emphasis on the very idea of purpose and meaning in the creation. The fear that many Christians have about evolutionary theory in regards to the view that the mechanistic explanation negates God is answered by Donald MacKay in his booklet, "Science and Christian Faith Today". Citing Col. 1:17 and Heb. 1:3, MacKay holds that both verses emphasize God's immanent activity, without which the universe would not just stop but rather without which it would cease to exist. With this view in mind, God's activity is more like a master artist than a machine tender. By bringing the focus to God's immanent activity, we see the inapplicability of such arguments as "evolution leaves no room for the God of action, precluding his function except in areas of fast-disappearing missing links." The true picture is that God acts in all of Reality, not just where we can apply a scientific explanation. The emphasis of scripture is that God has ordered His Creation not by virtue of producing a perfect mechanism, but rather because of His complete faithfulness, which is the ultimate basis of all things.

Science gives us the view of how life may have come about. Its view is descriptive, and does not in any ultimate sense account for what it describes. The most we can say based on present data is that God may have used an evolutionary mechanism to achieve the purposes delineated in Scripture.

electrophoretic patterns obtained in agar, starch, cellulose acetate or acrylamide gel have been utilized. Recently electrofocusing has become increasingly popular.

In addition to precipitation in fluid systems and solid media, the protein antigens often are coated onto eurythromycetes or plastic balls which will be clumped (agglutinated) to varying degrees in the presence of antiserum. Agglutination has proved to be a very sensitive method for determining relationships.

After Sanger and his associates published the sequences of amino acids which would join to form the protein insulin, structures of many more proteins including cytochrome c, ferredoxin, lysozyme and lactalbumin, have been published and utilized to draw conclusions about possible relations existing among organisms. Also various chromatographic technics have been utilized with digestion products.

Antibody studies using mixtures or purified proteins are continuing. Most recently a microcomplement fixation group has hypothesized a protein clock. The latest most sensitive immunological technic is radioimmunoassay.

Studies involving antigen-antibody reactions and protein sequence information have contributed to our understanding of taxonomic affinity. How far these may be extrapolated to phylogenetic history is questionable. Dr. Alan Boyden, the most well-known pioneer of biochemical taxonomy in this country, clearly has stated that such studies are valuable for a determination of "present natures" of organisms and that great care be utilized in extrapolating to past history. As for macroscopic and microscopic anatomy, many Christians recognize molecular studies as additional evidence of design from the hand of our Creator, God.

LIFE IN THE PRECAMBRIAN: IMPLICATIONS FOR THE CREATION OF LIFE

Frank Roberts, Delaware County Christian School

For many years some creationists have found comfort in the thought that life appeared suddenly at the beginning of the Cambrian period, about 600 million years ago. This supposed sudden appearance of life was taken as an evidence of God's intervention into the course of nature, an evidence of creation.

There has been, however, a slow but steady increase in the knowledge of Precambrian life, particularly during the past fifteen years. Calcareaous algal stromatolites (plant life) are known as far back as 2.7 billion years. Distinct animal fossils occur in abundance in rocks of Cambrian age to the present. But it now appears that life did not spring up suddenly at the beginning of the Cambrian, but rather existed in a more primitive and less abundant form in the late Precambrian. The discoveries in Australia in the late 50's of an extensive fauna of invertebrates of late Precambrian age, and in the late 60's in Newfoundland of many similar forms of similar shows that simpler forms of life than in the Cambrian were present during the late Precambrian. One may still affirm that there was a very considerable increase in the number and diversity of living forms at the beginning of the Cambrian period, but that they did not suddenly appear upon a lifeless earth, but onto an earth which had a remarkable number of living forms present.

These facts in no way destroy the Christian doctrine of creation, which like other biblical doctrines, does not stand or fall in the wisdom of men. We are, however, given a greater insight into the manner in which God created life.
THE TRANSITIONAL FOSSILS SPEAK--
PALEONTOLOGIC EVIDENCE AND
ORGANIC EVOLUTION

Roger J. Cuffey, Pennsylvania State University

When the rock layers of the earth's crust are examined for the distribution of their contained fossils, the fossils are found to naturally form sequences showing gradual and continuous morphologic changes from earlier to later forms of life.

Particularly striking are "transitional fossils", fossils which are both morphologically and chronologically intermediate between two previously well-known forms. Because of unevenness in knowledge of the fossil record, four different types of transitional fossils can be distinguished for convenience in illustration here. First, the most completely known groups of organisms show sequences of TRANSITIONAL INDIVIDUALS grading continuously from one species to another without break, sometimes linking several successive species crossing from one higher taxon into another. Second, less complete sequences of transitional fossils comprise series of chronologically SUCCESSIVE SPECIES grading from earlier to later forms. Third, even less complete sequences represent a continuous series of SUCCESSIVE GENERA (OR OTHER HIGHER TAXA) connecting earlier and later forms. Fourth, where knowledge is fragmentary, there may be found ISOLATED INTERMEDIATES, fossils strikingly intermediate between two relatively high-rank higher taxa but not yet connected to either by more continuous series.

The many sequences of transitional fossils documented by the paleontologic literature make evolutionary interpretations of past life scientifically inescapable. Organic evolution therefore, like other very highly probable scientific conclusions, becomes a demonstrated aspect of nature which must be appropriately integrated by theologians into their world-life views.

THE USE OF NON-RADIOMETRIC EVIDENCES
FOR AGE

Daniel E. Wonderly, Grace College

During the past decade there has been a great loss of confidence in scientific dating methods among many Christian laymen and clergymen. Much of this loss appears to be due to the fact that radiometric methods of dating have been publicized so widely that other techniques have fallen into the background. Thus many Christian laymen now are of the opinion that all scientific evidence for prehistoric dates is based on radiometric analysis—a type of dating which they have been told is wholly unreliable. This loss of confidence is lamentable, but in some cases may be somewhat justified, because there has been too heavy a dependence upon presupposition as a basis for some of the radiometric methods.

It is the responsibility of those of us who can, to help inform Christian laymen who are concerned about age. Because a wealth of new objective stratigraphic and paleontologic data has become available since the revival of the young-earth dogma, we now have a highly effective means of helping those who are still depending on old, superficial writings concerning the nature of sedimentary strata. Much of the new data which is now available is concerned with conditions and processes which man can observe directly, without the use of sophisticated instruments. This type of evidence is much more acceptable to those who are inclined to distrust scientific observations.

Some examples of types of non-radiometric evidences which are readily usable are: (a) Comparisons between drilling cores from ancient, extensive carbonate deposits, and studies of recent carbonate deposition processes, (b) Data on deep-sea sedimentary deposits, from the Deep Sea Drilling Project, (c) The thicknesses of both modern and ancient reefs, compared with data from studies of reef growth rates, (d) The extensive deposits of laminated evaporites found in many of the oil fields of the world.

SIMPLE EXEGESIS AND BIOLOGICAL CONFLICT

Herman J. Eckelmann,
Cornell University Space Center

The Bible never said an apple was eaten at the fall of Adam and Eve. It also never said the number of wise men who visited Jesus in His earthly childhood was three. And finally, it never said Christians should believe whatever feelings, thoughts, or even convictions that come to mind after prayer are the voice of God or revelatory of His will.

Just as the above erroneous traditions of the fathers have been propagated down the pipeline, so have also important biological errors been repeated and with much harm.

1. The Word of God never said man could never create or make life.
2. The Word of God never said God made the universe out of nothing.
3. The Word of God never said God made instantly the things specified for the first five creation days.
4. The Bible never said the creation days were 24-hour periods.

The Bible has always said God caused the earth to bring forth thus and such. Then the earth did it in the specified sequence of time periods of unspecified length in unspecified ways. Then it says this is the way God created things on the first five days.

The sooner these facts are widely recognized the sooner much unbelief in God and His Word caused by their neglect will be averted.

SOME SOCIAL AND PHILOSOPHICAL
IMPLICATIONS OF MODERN EVOLUTIONARY
THEORY FOR CREATIONISTS
AND EVOLUTIONISTS

Donald W. Munro, Houghton College

With the advent of some modern concepts in molecular biology, scientists talk seriously about controlling the evolution of man at the biochemical level. How will these findings be applied to man? How will the experimentation be carried out? A man who believes in evolutionism, even
though he may have a veneer of humanism, still abides by a concept of the survival of the fittest at the basic level and may look at other men as nothing more than evolved animals. On the other hand, it would seem that one of the unifying concepts for all those who claim to be Christians, is the creation of a human organism which possesses an undying soul. Thus, there may be a number of broad points on which the Creationist and Evolutionist could not agree when it comes to the application of control procedures and experimentation on man.

In order to have the Christian scientific community as well as the church united to speak to the critical questions on man, it may be necessary to modify some of our previous methods of approach. Dogmatism concerning a particular creation theory need not be approached with great caution especially since our knowledge of beginnings will never be able to assure us of Biblical exegesis or totally satisfy the scientific method. It is important that a peripheral religious concept not blind one into an irrational evaluation of scientific data. Care needs to be taken in the approaches used in churches for presenting scientific data concerning origins lest the laymen grasp a warped view of science and scientists. Finally, it is necessary to recognize who presents the real threat to man as God’s special creation and avoid as much infighting as possible.

BIOGENESIS - PARADIGM AND PRESUPPOSITION

J. W. Haas, Jr., Gordon College

The working assumptions, experimental approaches and degree of verification in studies of the origin of life question are those of “historical science” in contrast to the typical scientific investigation. Biogenesis models are amenable to a significant degree of experimental study. The successful efforts of Spiegelman’s group at Columbia in mapping the nucleotide sequence of a relatively simple RNA molecule capable of self-replication outside the cell offers opportunity to investigate factors which may cause evolution to more complex and structured molecules and ultimately the cell.

Christian thought has variously considered molecular evolution to represent God’s creative work in nature or to be antithetical to the scriptural record which is said to place the epic of origin in the realm of mystery. A critique of the various positions is offered along with some suggestions for a positive Christian approach to the question.

THE ORIGIN OF LIFE:
A FRESH LOOK AT WHAT THE BIBLE REVEALS

S. Hugh Paine, Houghton College

When scientific evidences are not definitive it is the normal expectation that there should arise differing schools of thought to support various hypotheses. Sometimes even in the most objective areas of science there has been continued debate in spite of data, the differences depending upon basic postulations and on subjective elements as well. It is not surprising that the origin of life is a subject about which there should be many schools of thought. It is, after all, an historic matter. Even though man should produce life in the laboratory he could only use such evidence inferentially in his search for historic truth. Historic events in general cannot be reproduced with all the attendant circumstances which makes them history rather than a repetitive action. So in our understanding of the past there is a special vulnerability to gaps in vital information: How can one reconstruct history about which there is neither report nor observed information? How can one be sure that all the important information is available?

If the Bible did not exist as a source of information about origins, it is not at all unlikely that differences in postulates and suppositions would produce some schools of thought supporting the idea of Divine origination or of special creation. The modern findings of molecular biology may cause one to wonder how persistent such group opinions might be. Perhaps naturalistic evolution might ultimately be found generally acceptable. But the writings which come down to us from antiquity and bear on this subject area claim for themselves Divine inspiration. If we regard them as such, they become an account of historic events of which we could never be aware from presently available naturalistic evidences and scientific findings. Christians have always regarded this revelation as a basis of understanding concerning the origin of life. Jesus accepted it. It becomes of primary importance, therefore, to examine it carefully to determine what God is trying to say to us through it.

EVOLUTION — A LEGITIMATE MODEL

Calvin D. Freeman, Cleveland State University

A study of the nature of science reveals that models are both characteristic and useful. The usefulness can be limited to, at the very least, the generation of further study. Other models help clarify and organize scientific data. Evolution should be viewed as a model, somewhat limited in its usefulness, but nevertheless legitimate. It is not to be confused with fact, nor is it to be substituted for religious dogma. Yet seen in the proper light, it has served and continues to serve a useful purpose.

One need not make a choice between creation and evolution; they are not alternative views and they can neither compete with or conflict with each other.

ORIGINS OF, AND IN,
CALIFORNIA SCIENCE TEXTBOOKS

Robert B. Fischer, California State College

Dean of the School of Natural Sciences and Mathematics at California State College, Dominguez Hills, Dr. Fischer was one of two scientists who served as advisers to the State Board of Education for editing science textbooks on the topic of origins. As a leading scientist and Christian, Dr. Fischer has been in the middle of the controversy over creation and evolution that has received such wide publicity. His presentation will be a first-hand account of the events and issues that emerged during the controversy.
CRM FILM:
"THE ORIGIN AND EVOLUTION OF LIFE"

This film has won several awards and is the most recent film dealing with the theme of this A.S.A. meeting. The following is quoted from a commercial description of the film:

This imaginative film is designed to introduce students to the study of biology. Beginning with an impressive presentation of the creation of the universe (as conceived by the "big bang" theorists), the film shows how (according to the Miller-Urey theory) the right chemical and climatic conditions on our infant planet might have led to the origin of the chemical building-blocks of life.

Extensive use of excellent microphotography and animation give students a graphic understanding of the way life may have been synthesized, how the ability to reproduce may have evolved, and how differentiation into plant and animal life may have occurred.

At first, life existed only in the sea, then it emerged slowly onto the land as well. The amphibians and reptiles flourished, the dinosaurs became the earth's predominate species, then suddenly became extinct. The mammals swiftly came into prominence, and man came on the scene.

In the film, Darwin's theory of the "survival of the fittest" is explained and demonstrated in a laboratory experiment with the bacterium Escherichia coli. As a conclusion, the evolutionary implications of man's influence on the global environment is discussed.

Following the film, a panel will discuss its implications in the light of presentations given earlier in the conference.

CHRISTIAN EDUCATION AND EVOLUTION

Albert J. Smith, Wheaton College

A survey of science and mathematics faculty of the Christian College Consortium reveals that institutional statements take a creationist position in very general terms with the exception of the origin of man. Most science faculty take a theistic evolutionary or progressive creationist position to accommodate scriptural and scientific evidence. Biology and geology departments consider the creation/evolution dialogue more fully than others, generally attempting an assessment of major positions. Donald Munro, of Houghton College, and Frank Roberts, of Delaware County Christian Schools, present their programs for college and secondary science education treating the concepts of creation and evolution.
GENERAL MEETING INFORMATION

REGISTRATION
Registration will be in the corridor outside Room 15 in the Science and Engineering Building, beginning at 2:00 p.m. on Monday, August 20.

MEETINGS
Technical sessions and devotions will be in Room 15 of the Science and Engineering Building. Other rooms necessary will be identified at the time of the Meeting.

TRANSPORTATION
(a) Those flying will arrive at the Pittsburgh Airport. The taxi fare to Geneva College is about $16. However, the local committee will make reasonable effort to meet those who specify in advance registration their flight number and time of arrival.

(b) For those driving, take Exit 2 (Beaver Valley Exit) from the Pennsylvania Turnpike and proceed south on State Highway 18 three and one half miles to the campus. If driving from the south, follow State Highway 60 (Airport Expressway) north from Pittsburgh for about 30 miles and exit at State Highway 18 going north (to the right) through Manaca, Rochester, New Brighton, and Beaver Falls to the college which is about 10 miles from the exit off the Airport Expressway.

ACCOMMODATIONS
The meal ticket for all meals except the Wednesday banquet beginning with dinner on Monday evening through noon lunch on Thursday will be $12.70. The banquet ticket will be $4.90 at the Holiday Inn. The lodging will be in Young Hall where 3-5 persons (family or a group of men or a group of women) share a suite of rooms. Each suite has its complete bath and toilet facilities. Linen, soap, etc. are provided with a total cost of $9.25 per person for the three nights. Additional nights can be arranged at a cost of $2.75 per person per night, if arranged for in advance. There will be recreational facilities, including swimming, for both children and adults during the convention.

For those desiring lodging other than dormitories, the following motels are located near Exit 2 off the Pennsylvania Turnpike about three and one half miles north of the college on State Highway