

**JOURNAL**

*of the*

**AMERICAN SCIENTIFIC  
AFFILIATION**

The fear of the Lord is the beginning of wisdom. Psalm III:10

Volume 3

June, 1951

Number 2

THE JOURNAL OF THE AMERICAN SCIENTIFIC AFFILIATION

Vol. 3

June 1951

No. 2

Single Copies \$1.00  
Yearly Subscription \$3.00

Send communications regarding editorial matters to the

Editor: Marion D. Barnes  
511 East Fifty Street  
El Dorado, Arkansas

Send business matters to the

Treasurer: H. Harold Hartzler  
107 West Plymouth Avenue  
Goshen, Indiana

Table of Contents

News of Members . . . . .	1
New Members . . . . .	i-iii
A. S. A. News and Announcements . . . . .	iii-vi
August 1951 Convention Announcement . . . . .	vii
<u>Symposium on Education</u> . . . . .	1
Chairman: Dr. Wilbur L. Bullock, Instructor in Zoology, University of New Hampshire	
<u>The Unifying Principle of the Universe</u> . . . . .	12
John R. Howitt, M. D., Superintendent, Ontario Hospital, Fort William, Ontario	
<u>"The Speckled and Spotted Goats and the Black Goats Shall Be My Wages"</u> . . . . .	16
William J. Schepp, President and Research Director, Schepp Laboratories, East Patterson, New Jersey	
<u>Atomic Fission</u> . . . . .	22
Alfred C. Eckert, Research Chemist, Columbus, Ohio	

### NEWS OF MEMBERS

Russell L. Mixter accompanied ten Biology students on the Third Annual Biology Spring Vacation Field Trip. The group made stops in Ind., Ky., Tenn., Ala., Fla., Ga. Dr. Mixter's summer address is Wheaton College Science Station, Route 1, Rapid City, South Dakota.

Alta Schrock has a two-year leave of absence. She will be director of a group of women working under the combined sponsorship of the Mennonite Central Committee and the International Refugee Organization. The later organization is concerned with the relief and rehabilitation of displaced people of all creeds in the western zone of Germany and Austria.

Henry M. Morris formerly of Minneapolis reports a change of address and a new position: Professor and Head, Department of Civil Engineering, Southwestern Louisiana Institute, Lafayette, Louisiana.

James W. McFarland of Cascade College, Portland, Oregon, is attending Cornell University this summer and next year to complete work on the doctorate.

David Spaulding expected to leave June 20 for a trip to South America.

Cordelia Erdman is at Grand Canyon this summer as ranger naturalist.

Paul Wright will be spending the summer in South America to study science and visit missionaries.

John E. Bennett reports that he is working in Dover, N. H. this summer and that "We have had many evidences of the Lord's working in the NU Christian Medical Society and are looking forward to even greater things in the fall."

F. Alton Everest returned June 1 from a month's stay in the Hawaiian Islands, principally Midway Islands, photographing the birds.

### NEW MEMBERS

George J. Bertsche of Woodburn, Indiana is now in the U. S. Army. B.S.-E.E. from Purdue, January 1951. Communications.

Frederick S. Brenneman, M. D. of 324 N. Schmidt Avenue, Moundridge, Kansas. He is co-owner and physician-surgeon of Mercy Clinic. A.B. Goshen College; B.S. and M.D., University of Kansas.

Donald C. Boardman, 311 E. Franklin Street, Wheaton, Illinois. He is Assistant Professor of Geology at Wheaton College and has a M.S. from the State University of Iowa in the field of Geology, with two years further at the University of Wisconsin.

Ivan W. Brunk lives at 43 North Glenview Ave., Lombard, Illinois and is a meteorologist with the U. S. Weather Bureau. B.A. Goshen College, Physics, Chemistry and Mathematics.

NEW MEMBERS--cont.

Dr. Richard Howard Bube is employed by the RCA Laboratories Division, Princeton, N. J. as research physicist. His home address is 146 Alexander St., Princeton, N. J. ScB., Brown University; M.A. and Ph.D., Princeton; Physics.

Howard H. Claassen, 148 Selby Blvd., Worthington, Ohio. A.B., Bethel College North Newton, Kansas; M.S., University of Oklahoma; Ph.D., University of Oklahoma. Physics. Assistant Professor, Ohio State University, Columbus, Ohio.

Glenn Esh, 114 N. Ninth St., Akron, Penna. Assistant director of Foreign Relief, Mennonite Central Committee and pastor of Monterey Mennonite church. B. A., Goshen, Chemistry.

Daniel Fetler, 431 Riverside Drive, New York 25, New York. Chairman, Department of Social Studies and Associate Professor of Political Science and History at Shelton College, New York City. His undergraduate study was done at the University of Riga, Latvia, Stockholm University, Northwestern University. His graduate study has been at the University of Chicago, Columbia University.

Woodrow I. Goodman is president of Bethel College, Mishawaka, Indiana (United Missionary church college). Home address: 1000 W. McKinley Avenue, Mishawaka, Indiana. B.A., B.S., Marion College; M.A. Wheaton College. Fields: Physical Science, History, Bible.

Alfred E. Hoover's home address is 718 S. 6th St., Goshen, Indiana. B.A., Goshen College, Chemistry and Mathematics. U. S. Army, Hokkaido, Japan.

Leland L. Howard, 35-11 146 St., Flushing, New York, is business manager in the North American office of the World Radio Missionary Fellowship, Inc. which operates the Voice of the Andes--A missionary radio station, Quito, Ecuador.

Ward Martin Hunting, New Salem, Massachusetts is Instructor in Chemistry at the Eastern Nazarene College, Wollaston, Massachusetts. B.S. Houghton College, M.S. University of Massachusetts.

Robert G. Keesey, of 1644 Campus Road, Los Angeles, Cal. was a student at the University of Southern California during the '50-'51 school year for the M.A. degree with major in Botany. His undergraduate degree was received at Wheaton College.

Wilmer M. Landis of Perkasie, Penna. is a teacher in the Franconia Christian Day School. M.S. degree from the University of Pennsylvania.

Thomas H. Leith, 30 Evans Way, Boston 15, Mass., teaching fellow in Geophysics, Massachusetts Institute of Technology, where he is working on his doctorate. His B.A. and M.A. degrees are from the University of Toronto. Home address: Don Valley Drive, Toronto 6, Ontario.

Beulah Marner, Converse, Indiana. Teacher. B.A. Goshen College.

J. Robert Martin, 111 North Virginia Ave., Penns Grove, New Jersey. He is a research chemist with E. I. du Pont de Nemours & Co., Wilmington, Delaware. B.A., Goshen College; M.S. and Ph.D, Pennsylvania State College.

NEW MEMBERS--cont.

Floyd L. Rheinheimer is a medical student at Indiana University. B.A. Goshen College. Address: 750 N. Tibbs Avenue, Indianapolis, Ind.

Timothy J. Strubhar of Hubbard, Oregon is a teacher at Salem, Oregon. B.S., Goshen College.

Mervin Swartzentruber of Middlebury, Indiana. He has B.A. and Th.B. degrees from Goshen College. Mathematics and Bible.

Reuben Widmer, M.D. of Winfield, Iowa. Goshen College and State University of Iowa.

Charles H. Willits, 61 West South St., Worthington, Ohio. He is research engineer of the Battelle Memorial Institute. B.S., Chemistry, Wheaton College; M.S., Ohio State University, Organic Chemistry.

Maurice A. Yoder, Instructor in Biological Science, Hesston College, Hesston, Kansas. M.S., University of Iowa.

Paul E. Yoder, 915 Waverly Drive, Albany, Oregon. B.A., Goshen College; B.S., Oregon State. Biological science. Minister.

Lester Zimmerman, Assistant Professor, Goshen College, Goshen, Ind. B.A., Goshen; M.S., Purdue University. Mathematics and Soil Science.

A.S.A. NEWS AND ANNOUNCEMENTS

The story of the A. S. A. has now been revised and is available to all members free of charge. A copy will be sent to each member in the near future. Additional copies may be ordered from the secretary.

- - - - -

The revised edition of Monograph Two, CREATION AND EVOLUTION by Russell L. Mixter will be off the press within a few weeks. Orders may be placed with the secretary. Single copies are 50 cents; in lots of 10 or more, 30 cents each.

- - - - -

The A. S. A. now offers a student rate for the Journal of the A. S. A. A year's subscription is \$1.50.

- - - - -

A.S.A. NEWS AND ANNOUNCEMENTS--cont.

The executive council has approved the project of the writing of a manuscript on science and the Bible to be used by high school students. Dr. William J. Tinkle has been given this assignment.

- - - - -

The Los Angeles area A.S.A. members and friends met at the Moody Institute of Science auditorium in West Los Angeles, May 8. Dr. Edward John Cornell, professor of Apologetics at Fuller Theological Seminary addressed the group on "Natural Theology--Its Limitations." The address was followed by open discussion. The A.S.A. film review committee reviewed a preliminary version of "Hidden Treasures."

- - - - -

In the near future the A.S.A. Journal will include two papers from the transactions of the Victoria Institute which has headquarters in London, England. Dr. B. P. Sutherland of British Columbia is working on this project.

- - - - -

Within a short time copies of back issues of the A.S.A. Journal will be available. Two hundred copies of each issue are being mimeographed. These copies may be ordered from the secretary. The price is \$3 for each volume or \$1 a copy.

The following is an index of articles appearing in Volume I and II

Volume I, Number 1, January 1949

A Christian View of the Development of Science

Marion D. Barnes, Ph.D. Research Chemist, El Dorado, Ark.

The Meaning of Mathematics

H. Harold Hartzler, Ph.D. Professor of Mathematics, Goshen College, Goshen, Indiana

Volume I, Number 2, May 1949

A Physicist's Glimpse of God

Paul Bender, Ph.D. Chairman, Division of Natural Sciences, Goshen College, Goshen, Ind.

The Eye As An Optical Instrument

Frank Allen, Ph.D., F. R. S. C., Professor Emeritus in Physics, University of Manitoba, Winnipeg, Canada.

Volume I, Number 3, June 1949

The Science of Heredity and the Source of Species

Russell L. Mixter, Ph.D., Chairman, Dept. of Biology  
Wheaton College, Wheaton, Illinois

The Scientifico-Logical Structure of the Theory of Evolution

Bernard Ramm, M. A., Professor of Apologetics,  
The Bible Institute of Los Angeles

Some Presuppositions in Evolutionary Thinking

E. Y. Monsma, Ph.D., Professor of Organic Science,  
Calvin College, Grand Rapids, Mich.

Volume II, Number 1

Deluge Geology

J. Laurence Kulp, Ph.D., Lecturer in Geology, Columbia  
University, New York

The Hole in the North

H. Harold Hartzler, Ph.D., Professor of Mathematics,  
Goshen College, Goshen, Ind.

Biology and Christian Fundamentals

Russell L. Mixter, Ph.D., Chairman, Dept. of Biology,  
Wheaton College, Wheaton, Ill.

Christian Treatment of the Mentally Ill

M. J. Beukema, M. D., The Pine Rest Sanitarium, Grand Rapids,  
Michigan

Behaviorism and Philosophical Psychology

Bernard Ramm, M. A., Professor of Apologetics,  
The Bible Institute of Los Angeles

Volume II, Number 2, June 1950

New Light on the Old Testament

Allan A. MacRae, Ph.D., President, Faith Theological Seminary  
Wilmington, Delaware

Fossil Sequence in Clearly Superimposed Rock Strata

Cordelia Erdman, M. A., Instructor in Geology, Wheaton College  
Wheaton, Ill.

Eye Witness

Roy M. Allen, Sc. D., Private Consulting Metallurgist  
Glen Ridge, New Jersey

Volume II, Number 3, September 1950

Basic Anxiety and Adamic Motivation

Philip B. Marquart, M. D., Associate Professor of Psychology  
Wheaton College, Wheaton, Ill.

Fifty Years of Development in Astronomy and Its Impact on Scriptural Interpretation

P. W. Stoner, M. S., Chairman, Department of Mathematics,  
Pasadena City College

Geriatrics and the Book of Ecclesiastes

Thomas M. Durant, M. D., F. A. C. P., Professor, Temple  
University, School of Medicine

Modern Physics and Christian Faith, Albert van der Ziel, Professor of  
Physics, University of British Columbia

Spiritual Truths in Mathematics

Angeline J. Brandt, Professor of Mathematics, Wheaton College,  
Wheaton, Ill.

Gamow's Theory of Element-Building

Delbert N. Eggenberger, M. S., Research Chemist, Armour & Co.  
Chicago, Ill.

Volume II, Number 4, December 1950

The Plan in the First Chapter of Genesis

R. T. Fulwood

The Fall and Its Relation to Present Conditions in Nature

Brian P. Sutherland, Ph.D., Senior Research Engineer,  
Consolidated Mining and Smelting Co., Trail, British Columbia

Why God Called His Creation Good

William J. Tinkle, Ph.D., Ball State Teachers College,  
Muncie, Indiana

The Paleontology of the Horse

Cordelia Erdman, Instructor in Geology, Wheaton College, Wheaton,  
Illinois

-----

We appreciate the number of members who have sent in their contributions for Sermons from Science and will be happy to hear from the rest of the membership who have not sent in their contributions. Send them to the secretary's office. This list of sermons from science will probably be published in the next issue of the Journal.

-----



1 9 5 1 C O N V E N T I O N N O T E S

Plans for the 1951 A. S. A. Convention are progressing slowly but surely. Papers are being lined up on a variety of scriptural and scientific subjects. Several papers will be presented on particular problems of Genesis, including chronology and concepts of important words and phrases. This year's emphasis on the social sciences will feature a consideration of a Christian approach to race and government by prominent Christians in those fields.

The field trip, usually included in A. S. A. conventions, will emphasize geology with an all-day trip to the Delaware Water Gap. In addition, there may be some tours of places of interest to A. S. A. members in the New York area.

All in all, we are looking forward to a time of Christian fellowship and scriptural enlightenment.

Hope to see you all in New York, August 28-31.

Wilbur L. Bullock, Chairman  
Program Committee

June 25, 1951

## Symposium on Education

Dr. Wilbur L. Bullock, University of New Hampshire, Chairman

The problem of education, particularly higher education, is a very diverse problem and one on which, I think, there are a variety of opinions in this group. We therefore, may use this occasion as a time of expressing our opinions. I don't think we are particularly inhibited around here about expressing our opinions and that is very good.

Education has a variety of definitions. One of my favorites is, "Education is the inculcation of the incomprehensible into the ignorant by the incompetent." Or, as one other writer has put it, "Those who can, do. Those who can't, teach." And then somebody else has added to the last one, "But then those who can't teach, teach teachers." So we have some very uncomplimentary remarks on the subject of education and I suspect that most of us here in the American Scientific Affiliation have had some very nasty remarks to make about modern education, whether from a Christian point of view or just from a scientific point of view. The problems that we have in considering Christian higher education are very diverse and I would like to tentatively outline a few of them. First, let us consider the two groups and second, specific problems.

The general problems are problems of attitude. There is a profound difference in attitude or point of view between Christian and non-Christian teachers. We find that the non-Christian attitude is the attitude of naturalism. Our attitude--although maybe some of our discussions here in these meetings have not indicated it too clearly--our attitude is to rely at least in certain fields upon super-naturalism. We do not believe that all things can be interpreted on the basis of naturalistic laws. Modern education is a materialistic education as compared to the general spiritual outlook of Christianity. And then perhaps the most important difference of all is that modern education is man-centered, the humanistic type of approach, whereas the Christian education is, or at least should be, a God-centered education. Those of you who are familiar with the Westminster Confession of Faith and the Westminster Catechisms know that the first question in one of them is, "What is the chief end of man?" "The chief end of man is to glorify God and to enjoy Him forever." Our modern educationalists have believed essentially the same thing except for a change of one word, "Man's chief end is to glorify man and to enjoy him forever." And so we have there a very basic, a very fundamental difference in approach, which I think it is very fitting for this group to consider. We have the antagonism of a general worldly philosophy--and by worldly philosophy I'm sure we all understand that that is not a unified philosophy at all. Any of us who have tried during our undergraduate days to coordinate what one English teacher has said with what another English teacher has said with what a history teacher has said, have undoubtedly gotten into quite a mess.

Among the other general problems that we have besides the guiding principle of a Christian education as being a God-centered education, is the problem (this might not sound too general but it's one that applies to all phases) of textbooks. Dr. Voskuyl was going to give us a little discussion on that. Perhaps we can get him to write a paper for us on the subject. The subject of the selection of textbooks is a very important subject in Christian education. This is true whether we consider Christian education from the point of view of a Christian teaching in a secular institution or the Christian teaching in a Christian institution. That brings us to another rather general problem in our symposium on education and that is the difference of the problems of a Christian individual teaching in a secular institution from a Christian point of view from those of a Christian teaching in a Christian institution.

I'd like to take just a few minutes here to briefly outline perhaps some of the problems that we have in teaching in secular institutions of higher learning from a Christian point of view. In so doing it is necessary to distinguish between private institutions and state institutions. In the private institutions sometimes we have a little more leeway than we have in others. Sometimes we don't. Certainly all the Christian institutions are in the private category and certainly any of us that would possibly accept a teaching position in a Roman Catholic institution would undoubtedly be limited by Roman Catholic dogmas. Unfortunately the same cannot be said of many of our other private institutions which were started by Christian men, founded on Christian principles and yet have departed far from the truth. I think one of the most outstanding pathetic examples of that that we have is Harry Elmer Barnes teaching in Smith College where we have just no correlation at all between what is now being taught in these institutions and the purposes for which these institutions were originally founded. Wilbur Smith in his book *THEREFORE STAND*, reviews that subject quite thoroughly. He indicates that many of our institutions which were originally founded on Christian principles have now departed from the truth. We all know the names of many of those institutions. And we deeply regret that they have passed into institutions of higher learning from a worldly philosophical point of view--from a point of view of materialism and humanism.

The problem of teaching in a state institutions is, of course, another type of problem in which supposedly you're supposed to be irreligious; you're not supposed to attack anyone's religion. And yet actually in most state institutions of the present day, providing you are not accused of being a communist, you get pretty good leeway in what you want to teach. Of course if anybody gets the impression that you are a communist or a communist sympathizer, then you really come under fire. But on the whole in most of our state institutions there is usually a pretty good leeway in what is said. I happen to know from experience at the University of New Hampshire that you can say quite a bit. One has to be very careful in what is said about the Catholic Church at the University of New Hampshire because they have an energetic chaplain who will show up in class the next day if you make any uncomplimentary remarks. But it's certainly not a question of suppression; he just wants to have his say. Maybe we as Protestants might benefit by that example a bit.

Turning now to some of the specific problems of teaching in a state or secular educational institution, we find that these problems will depend purely, of course, upon the nature of the course being taught and certainly we're going a bit afield from science because many of the courses that we have had to take as undergraduates, and many of our Christian young people are taking them as undergraduates, are not science courses and yet these courses have a far greater bearing upon a person's religious beliefs than many of our science courses. I can remember back to my own undergraduate days. I had very little difficulty with the problem of evolution in my biology course because I went to college prepared to ignore it, as much as one could ignore it. But where I had my greatest difficulty was in courses in English literature and in history in which higher criticism was introduced into the courses in which the very foundations of the Christian faith were attacked and denied. In the science courses we might say, "Well, we don't know enough about the Bible, other people don't know enough about science, so we can sort of reserve our decisions." But in courses in which higher criticism is introduced there can be no such compromise, no such temporary putting off any decisions. We're faced with the problem of here these men are saying that the Bible which we believe to be the inspired and infallible word of God is nothing but a collection of Hebrew mythology. This is a serious

problem and, of course, while we don't have anybody here qualified perhaps in outlining what a Christian approach to it should be, at least as far as the details of organizing a course in English literature or ancient history, I think we certainly have some ideas of what we would expect in such a course from Christians.

In the problem of teaching the sciences we are faced with the problem of exactly how we are going to present it. Now, of course, there are science courses and science courses. I think most of your chemists and physicists could probably get along quite well without ever considering evolution and you probably wouldn't have much controversy in presenting your courses in a secular institution. In the teaching of the biological sciences, however, we might run into some difficulties. Even here we have many courses which are completely apart from evolution. We are considering simply how things are; what makes them tick in the present world. But many of the courses, I think particularly of that course that all pre-meds are forced to go through, Comparative Anatomy, we find that is the course in which evolution is shoved down everybody's throat and the worst part of it is that it is in a pre-digested pill form; nobody gets much chance of examining it; nobody's very qualified, usually including the instructor, and so we find that evolution is a very serious problem there. And I think that one of the problems we might consider this afternoon is how we can handle the course in Comparative Anatomy in a secular institution. I've asked Dr. Bender if he might introduce some of the general problems of education in a Christian school.

Dr. Bender: The problem of teaching or of education from a Christian viewpoint is not confined, of course, to the college level on which most of us are active. It is a common problem through the entire educational system from the kindergarten on up. And I think those of us who have concerned ourselves at all with an interest in educational affairs will recognize that this is merely a reflection of the current philosophical trends of materialism and humanism as has been mentioned. It is a reflection of the intellectual flavor of our times and this of course occurs not only in schools. It occurs in all our intellectual contacts. Children and young people as they grow up meet these influences through practically all their contacts--newspapers, radio, periodicals, conversation, and in school. But our discussion here today, of course, is to be limited to education and I take it by implication that it is limited also pretty largely to higher education although we need not let our thinking stop there. Our problem then becomes one of actually making effective our Christian philosophy in the schools and we must do this in the face of the counter-philosophies that are current. Those of us in colleges have to face this problem not only because the materialistic and humanistic philosophies are those that are most commonly met in textbooks and in other sources but also because the young people who come to us even from our best Christian situations have been pretty largely exposed to the current materialistic and humanistic philosophies and in many cases have pretty largely absorbed these philosophies even from the best situations. My experience, of course, has been in a Christian school and has been pretty largely with young people who have come from Christian homes, but even there the problem is a very real one. We might look a little more specifically at what the problem is. I don't know whether we're going to get as far as to suggestion very concretely any solutions but we might point out a bit at least the types of solutions that we have been trying to follow.

One very obvious problem always is the selection of textbooks and in the science area there are almost no textbooks that will exhibit directly, positively, a Christian philosophy. There is a wide variety, of course, of viewpoints in the various textbooks. I have found myself in making selections of textbooks fre-

quently choosing the one that is least objectionable insofar as its philosophy is concerned. There are certain books that make it the primary thesis of the book to put forward a philosophy which is anti-Christian, and that is frequently found in biology textbooks; perhaps much more so than in others where it becomes the primary thesis of the book to promote a viewpoint. There are other textbooks which simply take the viewpoint by implication and those are much more easily handled and I've often found myself choosing between two textbooks on that basis. I would certainly much have preferred to choose a textbook that has a Christian philosophy but generally that has been impossible. After we have such a textbook in the class, it then becomes the task of the teacher to interpret it still further. That is sometimes not so easily done, to alter the flavor of the teaching in the classroom as compared to what exists in the textbook. But surprisingly it can frequently be done and I think fairly effectively. I have to wonder sometimes, however, how much we are unconsciously following what we ourselves have absorbed even though it is our express purpose and our conscious purpose to follow a Christian philosophy, yet our own background, our own training, and our own reading is almost exclusively in literature that does not have a Christian philosophy. I wonder sometimes how much we are able to really integrate our own thinking and thus pass it on to our students. I think we must always be on the alert to check ourselves and do the best we can. I find that it is often possible to help the students to see a Christian philosophy even though the textbook doesn't specifically show it, although that is difficult. We have more to say about this a little later.

The second problem, of course, is the student himself--which is the primary problem. The student comes to us from his grade school and his high school experience having had books, as I say, beginning clear down in the kindergarten that have a non-Christian philosophy, and he comes to us frequently himself a Christian from his strong Christian or church background in which he wants to believe and yet he is disturbed. Also we have the student who comes to us who has openly accepted the philosophy that is current. In approaching these students of both classes I have found it most effective to teach science (which is my field, of course, and I might just point out that the things I've said hold perhaps equally well in most other fields) from as rigidly a scientific viewpoint as possible. That's always a problem of scientists, of course, to be strictly scientific, or objective, I might say. But if one approaches the problems of science from the purely objective viewpoint and leans entirely upon a logical objective interpretation, he gets farther along than if the teacher starts out at once by saying that that is wrong and that is right. Because ultimately what one needs to do is to lead the student's own thinking and that cannot be accomplished by starting out dogmatically by saying that this viewpoint is right and this viewpoint is wrong. You don't accomplish anything. Usually if a student actually wants to think, you must lead his thinking. I've had some very interesting experiences with freshman science courses in this respect.

Some years back I had a class in which there were quite a number of students who were rather skeptical and they were free in asking questions and I found it necessary to refrain at the early part of the course from making much comment about a Christian interpretation but by the time we got through the course I think I was able to lead the students' thinking by presentation of facts to a position in which they were ready to accept some of the Biblical interpretations that one would place on science. And I think that is a good approach. Now that doesn't solve all our problems by any means, of course. I would like very much to see qualified scientists write good scientific textbooks--good from the viewpoint of science with a Christian philosophy. It can be done. I don't know if anybody is working on that job or not. I wish they were. Maybe some of us should attempt it. But it can be done, and incidentally if that job is done right, it

can have an influence considerably wider than the circles in which we move, for instance, Christian schools or Christian teachers in other schools. If the job is done properly it can reach much farther.

Another problem is to have good teachers, teachers with a Christian viewpoint. It seems to me we have perhaps done more in that direction than in the textbook direction. Many of our colleges are preparing teachers and sending them out with a Christian viewpoint and thus their influence is rather wide. Of course we always have the problem of what one might call academic freedom. Dr. Bullock referred to that. I think most of us are not much hampered by that and yet it is one that we need to be conscious of--that we are actually free to present a Christian viewpoint. These are mostly problems. I haven't attempted to present much of a solution and I have done, of course, my presentation pretty much from my own viewpoint, my own rather limited circumstances in a Christian college. Many of you have had different experiences and have had wide experiences. I would appreciate very much a good discussion.

Dr. Bullock: I see our other speaker has not arrived as yet. Dr. Wiebe is going to consider particularly the teaching of sciences in Christian schools. This is a much more specific subject than was brought up so far. But I think at this time we would like to throw the meeting open for discussion. We've got representatives from secular institutions, from Christian institutions; we have representatives from a good many fields of science and even a few so-called non-scientific fields. So I think we ought to be able to get into a good discussion and have these subjects that have been mentioned, the problem of textbooks, the problem of the preparation of teachers with a Christian attitude, the problem of instilling into the students that Christian attitude. Who would like to start the discussion?  
Dr. Hartzler.

H. Harold Hartzler: With reference to the point of the lack of a Christian philosophy both in our textbooks and in our teaching, I would like to report this incident which comes to me rather strikingly. I am always slightly alarmed or disconcerted when I hear in a group like this the Roman Catholic church spoken of as though it were not Christian or almost sub-Christian. I had a Roman Catholic student in my course in physics this last year. At the end of that course the following examination question, the final question was something like this: "How did this course help you in enlarging your views of God and His creation?" Now this was a tough one to this boy. He told me afterwards how he felt about this question. He couldn't say anything about that. I guess that shows the lack of teaching on my part. But the interesting thing that comes to light out of this question is the following, which I think throws a little light on our whole lack here. Some days after school he brought his mother (this boy was from Mexico, by the way). She traveled from Mexico to Chicago to see another son and came down to Goshen to see this professor who would ask a question concerning God in a science examination. She had never heard of it. It was entirely a new thing to her. Now it appears to me, ladies and gentlemen, that we all these years have been afraid of saying very much about this. This mother came from Chicago to Goshen, Indiana, just to see a person who would do that. Unfortunately I wasn't at home so she didn't get to see me. But I appreciated the interest of this family, a Roman Catholic family, in this question in which we are vitally interested. I give that for your consideration.

With reference to textbooks, I think it's high time that something gets really done. We've seen this need in the affiliation for years. It's a big job. We as members in the affiliation I think all feel rather modest about this, therefore we have done nothing. Isn't it high time that this affiliation start a

movement which will be positive so that Christian textbooks will be coming off the press which can be used in our schools and colleges in this country?

Bullock: With reference to your comment on the Roman Catholic church, I think that we'll have to admit that the Roman Catholic church has done a lot more in this problem than the Protestant churches have in trying to establish a purely and consistently Roman Catholic philosophy of teaching. It is something that we should spend more time on. Are there any other comments?

Buswell: I'd like to just offer a suggestion on two different points--one on textbooks and one on the conduct of a scientific course in a Christian college or a Christian school. Regarding the latter point it is a danger, I think, which most of us admit, that we must be careful not to offer too sheltered an atmosphere in a Christian school in scientific classrooms. By that I mean we must not seek only for the presentation of the scientific subjects from the Christian point of view. It is well known that many students get out of a Christian institution and in their first encounter with the world, be they graduates in graduate school or in professional life, they meet problems that are unexplainable to them in terms of the education that they have received and consequently the result has been either a loss of faith or a retreating into a position where the testimony is definitely harmed. Now this can be circumvented by, first of all, presenting the most accurate aspect of the evolutionary of the anti-Christian position in every classroom of science.

In choice of textbooks in several different classes that I've been in, not in graduate school, but in Wheaton, and also is this done at Shelton College too, to my knowledge, the textbook is not chosen exactly for the most non-belligerent attitude but in some cases is chosen, other things being equal, (that it is a scholarly textbook) chosen for its very presentation of the opposite extreme which than is used to educate the class into the position of the world and then the Christian attitude toward this is taken up by classroom discussion or by alternate assignments in Christian books. In other words, what I'm trying to say is that the presentation of the extreme anti-Biblical position no matter what the classroom subject may be is a necessary accompaniment to the presentation of a true Christian scholarship. If I might give an illustration in the school which I represent.

My father has made it a point at Shelton College, which is a new name for the National Bible Institute, ever since he came there about nine or ten years ago, that a graduation requirement of the Bible Institute, then called so, was that a course in laboratory science be taken from one of the major universities in the city--Columbia, New York University, or City College. That is, a basic laboratory course in geology, biology, or chemistry which my father terms the "in-battle training among the heathen." And this is then accompanied by a weekly seminar or weekly round-table discussion by those students who are members of these classes with one of the faculty members, discussing, airing, and explaining problems that come up in relation to the Biblical views which are encountered. This has been very valuable and at the same time has served to give the students themselves a high level of technical training.

The other subject which I just want to mention briefly is that of writing of textbooks. And this has to do with the level of education in the grade school as well as in higher education. There are two ways of accomplishing this Christian textbook lack. One is the assigning or the advocating that Christian textbooks be written here and now, say by individuals or by committees which are chosen and delegated to meet particular textbook needs. Another is the advising of Christian



young people to go into the sciences at the college level in preparation for a professional life which will bring into being textbooks after a mature period of growth in the author's mind. The latter, to my thinking, is a healthier position even if it takes longer.

Now at this point the scientific and political and diplomatic world looks to the Catholics, for instance, who have been training their personnel in the Catholic University in Washington, D. C.; for instance if a man wants to get a personal secretary who is a male, a man secretary, for any kind of business that needs a male secretary--he has to go to the university in Washington, the Catholic University, where they have about the only professional level training course for male secretaries in the country. Furthermore, they have the only diplomatic courses in the country that are training diplomats so that when we assign foreign representatives of our country, in a large percentage of cases these are Catholics with the logical implications as you can see resulting.

Now the writing of textbooks is another, that is the lack of Christian textbooks is I think another, indication of the lack of Christian, Protestant Christians, engaging as their life activity in the scientific field. Now if it is our emphasis as an association to urge young people to choose scientific fields as a life work for the Lord, this will invariably result in a production of textbooks as a result of a mature and developed scholarship along those particular lines for which these people are trained and not necessarily the result of an assigned and more or less hurry-up production of textbooks by a committee or by an author who is assigned this particular task.

One more last point regarding textbooks in the lower grades. And I throw this out more or less not by way of advocating anything in particular, but by way of throwing out an example of the deplorable situation of the out-of-date textbooks that are authorized by our schools. In New York City our Christian grammar school, of course when it started, asked the New York Board of Schools to recommend the textbooks which they should use so that they would not be criticized for having any lower level scholarship than the New York Board of Schools has. After they had gone for about a semester I was asked to take a look at the history book to see if there was anything in the first chapter which had to do with the origins of man's civilization and which I felt was contrary to the Biblical point of view. I had never been aware of the problem before but I was amazed at what I discovered. The textbook which was authorized was written in 1931 by two individuals neither of which had a doctor's degree, which may or may not be significant, but was written in 1931 and had advanced theories which at that time were out of date and were unscientific speculations regarding (1) the development of language; (2) the development of social organization; (3) the development of mankind and his physical body; (4) the history of the Bible, for instance. And furthermore, for recommended reading for the teachers at the end of the first chapter--for the teachers, that is, to augment their knowledge of the subject--the most up-to-date thing they had for the teachers to read on the origin of man's civilization was Tyler's Primitive Culture which was written in 1871 ! Now this I think could be perhaps corrected by more of us considering as a serious need the education of our children and not taking for granted that they will catch up to date when they get to college.

Another aspect of the problem is brought out by the serious out-of-date demonstrations in the museums. You see the high school boys and girls with their notebooks taking notes on the evolution of the horse as it was presented this morning which is taken from displays that were put up there as much as 30 years ago and which even according to evolutionary scientific point of view, are out of date. Now I think that if either as an organization or as a Christian body of



teachers and of scientists we would raise a protest regarding this thing with documented evidence about these out-of-date displays, out-of-date textbooks and out-of-date methods of teaching, that something of an advance in bringing things up-to-date could be accomplished for the betterment of our children in grade school, resulting in the betterment of the high school level of preparedness for entering college and then the college standards could in turn be raised.

Bullock: Thank you, Mr. Buswell. Any comments on what Mr. Buswell has said or any further comments? Mr. Monsma.

Monsma: First of all I have a question which perhaps Dr. Saarnivaara could answer. I'm just wondering how much the Lutherans have done in this matter of textbooks for their elementary schools. I'm not talking about higher education now. My remarks are with reference to the elementary Christian schools. As far as our Reformed people are concerned, most of you know that we have parental schools--societies which conduct schools for Christian instruction--and although we have had these schools for a number of years in our country we are still faced with this textbook problem. It was only a few years ago--two or three years ago perhaps--that some men among us took an interest in this matter and I just want to pass this on for information this afternoon.

They organized a foundation which has the specific purpose of supplying Christian textbooks for the elementary schools. Our schools are not organized into any definite organization but there is what we call the Union of Christian Schools which unifies the work of the schools. The foundation was formed by just a few men, I think five or seven men, who stuck together and incorporated as a foundation for the purpose of collecting money to help the Union particularly in producing Christian textbooks. They succeeded in the first campaign of collecting more than \$100,000 and they spent or gave to the Union something between \$40,000 or \$50,000 of that money to build themselves a modest building and now they have a nice little building in which they have started to work particularly on the textbook problem and also on other things. The rest of the money that they have, and they are still trying to increase the fund, they expect to spend on producing Christian textbooks for elementary schools. Their greatest problem, I think, is to find the writers for the textbooks. They must have, if they want to get good textbooks, men that are qualified in their field. They must not only have knowledge of their subject but they must be experts in the field of education. I believe they have started on, or they have in print now, a book on history. The foundation gave the Union money to employ a man for a year or so, I think, to devote all his time to the project of writing a book in history for students in the Christian schools. I think that book is now completed and in the process of being printed. They expect to undertake only such ventures as the Union suggests to them in the line of textbooks with the money they have. I believe this is accurate information. Not much has come of it yet because they are just starting out but anyway there's a little hope of getting some kind of textbooks for our elementary schools. I don't know if there is any further information on that, but they are active in that line.

Bullock: Dr. Saarnivaara, did you care to make comment on the situation in the Lutheran church?

Saarnivaara: I have not been much in touch with the work of our church relating to the question raised and cannot therefore answer it.

Bullock: Any other comments? I'm sure this larger problem that has been brought in is something else with which most of us are very much concerned, particularly those of us that have children that are in school or are about to start school. I was made acquainted with a textbook just recently being used up in Portland, Maine, (a pastor showed it to me) which was discussing ancient history and clearly portrayed the children of Israel as a wandering tribe of trouble-makers, that was essentially the description that they gave and did not put them into a Biblical context at all. And that I think is certainly a very serious problem. Are there any other comments? Mr. Brenneman.

Brenneman: I would like to make a few remarks about propaganda in education. By propaganda I define it, for my use at least, this way: "A biased selection of truth to foster someone's prejudice or economic interest." I think one of the purposes of education courses is respect for truth wherever you find it, and I don't think that the welfare of the human race can be served by biased selection of truth which will lead one to false conclusions. I know of a college that has in its charter the provision that this school among other things is to teach the sciences which do not conflict with the beliefs and practices of the church. That's rather frankly saying we're in favor of teaching Truth unless the Truth conflicts with our theology and then we'll suppress the Truth. I think it actually, in fact, works that way, leaving the student when he comes out of the school to find the Truth--the other half of the Truth. He is led to a suspicion of the honesty of the school as a whole. Now outside of theology, which is of course one very fertile region for prejudice, we have economic prejudice, prejudice associated with patriotism. To be specific, I talked a little bit with Professor McCombs, who is superintendent of schools at Des Moines, Iowa. He had a relative in Georgia who was educated in Georgia and he visited him a few years back and looked over the American history as taught in the Georgia schools. He said he could hardly recognize the Civil War from what he read in the history of Iowa. Now, did both histories tell lies, or did both histories select partial truths to foster their local conception of patriotism. Now, if that can exist in the United States in two parts of the country that are supposed to be united, what can you expect between an American reading a history of the Revolutionary War in the United States and an Englishman reading the history of the Revolutionary War. In fact I could, if I wanted to take the time, recite a history of the Revolutionary War that you would be surprised and that you had never heard in American history. It gives an entirely different picture of what the Revolutionary War was about. How about the situation between Germans and French. Do you suppose the French student can read the same history of the Franco-Prussian War that the German student would read? And how can these peoples understand each other? And how can there be any hope of international harmony if the students that grow up in these countries and become the patriotic citizens of these countries can't read the thing that is a fact upon which to base a decision? Now that applies to the United States of America just as well as it does to other countries. We have our prejudices. Our textbooks on history are not always, I'm afraid too often, not written to give us truth but written to flatter our conception of patriotism, which is one of the foundations of wars.

Bullock: I think this problem of propaganda is one that is well taken--one that we Christians have to avoid. I had a direct experience with that over in Europe. I read a history of World War I one night in a German history textbook. It certainly wasn't the same history of World War I that I had gotten here in the United States. But we do have that problem and I think it is a problem that has come to the fore even in the field of science with the discussion of the Russian geneticist Lysenko. And we have there the question of man who was subverting the Truth

to a dogma. I suspect if we look over some of our so-called Christian apologetics we find that many of those have sort of gotten into that same category...subverting a truth to a dogma and I think we have to be very careful along those lines, of carefully analyzing what is the real truth and what is just a reflection of the philosophy of our times. Dr. Tinkle.

Tinkle: I'm glad for what has been said about selection and writing of textbooks. I hesitate to say anything on this subject, being the author of a textbook myself. But understand I'm not talking about my textbook this afternoon so just for the time being forget about that. But I still feel that we should have textbooks written from the Christian point of view. Now especially the first edition may not be quite so large as the textbooks that are most generally used. But some of our textbooks are too large. They cost too much and they suit the teachers much better than they suit the students. The teachers select them, but the students, while they do not say much about it, are not very enthusiastic about them because there is too much material there and they know that the teacher doesn't expect them to memorize all that material and they hardly know just what he does expect them to learn. So while it's quite a task to write a textbook, I still feel that it should be done. The student is likely to feel like this. The teacher is continually disagreeing with our textbook yet he is the very one who told me to buy that textbook and pay four or five dollars for it!

Bullock: Of course, one might question the advisability of using student judgment for a textbook. Just this past year I noticed a new textbook in histology appeared and at the end of the semester I asked for a student evaluation of the textbook. And I told exactly why I wanted it and I think they were agreed that it would not affect their grade in any way and most of them seemed to find fault with the illustrations in the textbook. The only trouble is that about fifty per cent of them thought there were too many illustrations and the other fifty per cent thought there were too few. So, I don't know about simply using student evaluation to judge the textbook. But we do need some means of evaluation of our textbooks, ways of which they are getting the material over to the students. Are there any other questions? Perhaps we might try to limit our questions now to the question of textbooks. If any of you have any other ideas about other subjects we can go on to that. Are there any other considerations now on this problem of textbooks?

Bender: I am very sorry Dr. Voskuyl is not here. In the last day or so in speaking about this symposium I have heard a few remarks around the corners about his having had this problem in hand somehow or other. I wonder whether anybody has any information about his activities which would be of value to us.

Mixter: Dr. Voskuyl is on a committee of the National Association of Evangelicals which is discussing this problem. He has sent questionnaires to various people asking what textbooks are needed, what textbooks are now in the process of being written and has collected that information. I don't know anything about the results but that is the sort of thing he's doing.

Regarding the problem of teaching in non-Christian schools, it is my impression that the Inter-Varsity Christian Fellowship is making a noble attempt to supplement the type of materials in the classroom by inviting specialists in various fields to discuss those topics. For instance, they'll have a theologian on the campus or a sociologist or biologist from Christian schools who will attempt to evaluate the whole program. Monograph No. 2, which you members received, grew up as comments on one of the books we used in the combined evolution course at our school and it's in print. It has what I think about the book, and then of course

the students read the book, and they can make up their own opinions from the two. I wonder if more of you wouldn't like to do that sort of thing. You, of course, are welcome to buy mine and use it in your course but a lot of you don't agree with it. Why don't you write your own opinion of evolution, your own opinion of various things that are thrown at you from the biological side. What do you think about materialism? What's your answer to it? Get it down in print so the rest of us may have it. Even if you just write comments on a portion of a textbook; that's very usable. I'd very much agree with Jim Buswell's idea that we ought to use the non-Christian books in the Christian schools so we can tell what the other fellow is thinking about.

Bullock: I think, certainly, as far as the non-Christian schools are concerned the value of organizations such as the Inter-Varsity is unquestioned and I think many of us, perhaps even those of us who have had our education in non-Christian schools--can think back on some very blessed times of fellowship that we had with Christians. I can think back of the organization of a group, it wasn't an Inter-Varsity group at my undergraduate college, and it certainly was a joy and a pleasure to meet fellow Christians on a college campus. I was talking to somebody here this morning about the problem of the Christian college student in a non-Christian college. He is in a very unique situation, because as a Christian on the college campus he is marked because he has a Christian attitude, maybe all Christian attitudes at the present time are not the same, but he definitely has a non-materialistic, non-humanistic attitude toward all of his courses. So he is immediately set off on the campus as somebody that--well, they might be a little charitable and not call them queer but at least he would be strange and different. On the other hand, that same individual in his home church very often is in a class by himself and I think maybe some of us can remember the times in our home church when we had very serious difficulties as a college student and we were referred maybe to certain books that just didn't solve the situation at all or we were told that we didn't have enough faith and we'd better get straightened out on it and so on. And so the Christian college student in a non-Christian school is one that is in a very difficult situation. I think that the American Scientific Affiliation could certainly give such groups as the Inter-Varsity our loyal support and perhaps we might be able to get some information from the Inter-Varsity on their reaction to some of these problems. Are there any other discussions now? Mr. Buswell.

James Buswell: I think it might be appropriate to make one more comment in regard to the A. S. A. Symposium, MODERN SCIENCE AND CHRISTIAN FAITH, the second edition of which is about to be published. It will provide a great service for all of us who are teaching courses in any department of science which this book covers insofar as we can choose the chapters relative to the material considered in the scientific textbooks which are written from the non-Christian point of view. This, of course, is going to provide a great service for most Christian schools in the country if we are able to publicize this textbook enough. I have found particularly in the lecture course in anthropology that the best thing to do is to have a typed reading list for a course where no one particular textbook is required to be purchased by the student. This is not possible in some courses but in a lecture course on a scientific subject of a more theoretical nature it is, and this is one place where the A. S. A. Symposium can come in very handy and very beneficially in showing segment by segment in the course what the Christian attitude towards this particular thing is and this is through the teacher's own presentation of that view of the students.

Bullock: Any further discussion? Does anybody have any other remarks they would like to make at this time? Discussion closed. Thank you.

## THE UNIFYING PRINCIPLE OF THE UNIVERSE

John R. Howitt

### Foreword

This paper was prepared rather hurriedly by the writer in the hope of presenting something of a positive nature. The writer has recently been cut off by unavoidable circumstances from larger libraries and other contacts which would ordinarily be necessary in preparing such a paper. He is fully aware of its imperfections and the vulnerability of the thesis, and had intended to withdraw the paper for more careful preparation later. On the advice of the Committee on Papers it has been allowed to stand, however, in the hope that the paper may stimulate discussion. It is believed that the subject is timely and profitable for study.

### Editor's Note:

One section of the paper entitled "Modern Reductions in the Time Element" has been deleted. This section was open to some legitimate question and since it was unessential to the basic theme and structure of this paper it has not been reproduced.

- - - - -

From the earliest times man has been seeking for a unifying principle in nature. The universe is so vast and the mystery of life so great that man has for ages sought to reduce the tremendous mass of detail to a simple formula and to bring some sort of order out of the apparent chaos.

### The Search

Thus the Greeks came to the conclusion that the world was composed of four elements, earth, water, fire and wind. That was very simple, of course, but it apparently satisfied the philosophers of the day. Since then however the mass of knowledge has enormously increased. Many laws of physics and chemistry have been discovered and our knowledge of matter and energy and of time and space has been extended. Nevertheless the hunger for knowledge is never satisfied and during the past few centuries the search for a unifying principle has been intensified.

In all the tremendous mass of knowledge which has accumulated it is reasonably assumed that there must be some order and discipline, yet no one has been able to discover or define its unifying principle. If that principle were discovered it might perhaps afford the key to the still greater problems of purpose and design, and the relationship of structure to function.

### Older Theories

In the past three centuries there have been a number of attempts to simplify the principles of nature. In 1785 James Hutton, a British geologist, formulated the doctrine of continuity or uniformitarianism. According to this principle essential uniformity in the causes and effects has prevailed in all ages of the world's physical history and the activities of the past were similar in mode and intensity to those of the present time. No one, of course, doubts the uniformity of the physical laws in the past as in the present but the doctrine of uniformity

excludes the element of supernatural intervention, particularly in regard to creation and the miracles and also the doctrine of catastrophe and the eschatology of the Bible. On these grounds it has rightly been repudiated by Christian scholars. The doctrine of uniformity was one of the first of the modern attempts to formulate a unifying principle. It was the idea of endless conformity to the laws of nature, a simple correlation, as it were of time and space and matter.

In 1859 Charles Darwin published the "Origin of Species," and there seems to be little doubt but that the startling acceptance of his theory was due largely to the natural desire of man to find a unifying principle in nature such as evolution appeared to be. Thus Dr. W. R. Thompson, F. R. S. (1) Assistant Director of the Imperial Institute of Entomology in London, has stated, "the concept of organic evolution is very highly prized by biologists, for many of whom it is an object of genuinely religious devotion, because they regard it as a supreme integrative principle." The concept of evolution appeared to correlate the whole realm of biology, geology and cosmology.

### The Search Continues

Now it is important to notice that the search for a unifying principle is being continued today with even greater intensity. Thus Albert Einstein (2) states that "this motivation for setting up new theories is, so to speak, trivial, imposed from without. There is another more subtle motive of no less importance. This is the striving towards unification and simplification of the premises of the theory as a whole." A few examples will suffice to illustrate the present trend in the search for a supreme integrative principle, and no effort will be made to exhaust the field.

### Modern Attempts to Discover a Unifying Principle

Francis J. Mott (3) seeks to simplify the universe into a single principle of rhythmic interaction between a nucleus and a periphery. Biology, anthropology, physics and chemistry, astronomy, and even psychiatry may be explained on this simple principle which he describes as biosynthesis. Another example is that of Prof. N. Rashevsky (4) whose textbook "Mathematical Biophysics" seeks to reduce biology to mathematical proportions. Prof. Born's (5) recent book on the "Natural Philosophy of Cause and Chance" appears to be still another effort to correlate into some general principle the amazing problems of cosmogeny.

Albert Einstein (6) has recently announced his new unified field theory involving the unity of gravitation and electromagnetism, but no one can tell just what the outcome of these deductions may be or their effect upon the older theories of uniformity and evolution. It is believed by many that advances in the field of nuclear physics may result in revolutionary changes in science and philosophy, particularly in regard to the problems of creation and the age of the universe.

We have seen how potent a unifying principle may be in the case of evolution and no less remarkable has been the result of the unifying principle of the Hegelian dialectic when applied to political economy. Hegel's dialectic was itself an attempt to simplify and unify psychology and philosophy into a simple formula of thesis, antithesis and synthesis. Engels and Marx applied the Hegelian principle to history. Historical movements, they explained, would always be followed by the exact opposite and the final outcome would be the unity of the

opposites. After feudalism came capitalism and out of the two opposites would emerge the synthesis of socialism or communism. We are only too familiar today with the momentum which the concept of this unifying principle has given to those who for their own aggrandizement have exploited the struggling masses of mankind.

### The Spiritual Realm

When we come to the spiritual realm we find an inherent desire to simplify and arrange the great mass of revealed truth into a simple formula. The various creeds of the early Christian church were perhaps the best attempts to arrange in orderly fashion the basic truths of the Christian faith. Arminius and Calvin made statements of faith which bear their names and which have done much to clarify the major problems of theology. In each instance there were five points of doctrine which were considered to be essential. Later the 39 Articles of the Church of England and the Westminster Confession of Faith have played an important role in the history of the Church. The Baptists have retaliated against this attempt to tabulate Christian doctrine by taking the New Testament itself as their creed, but this might be regarded as perhaps an over simplification of the problem. More recently still, the Exford Group Movement produced the four absolutes in an attempt to unify and simplify the Christian way of life. The World Council of Churches and the ecumenical movement reflect the religious-political ideal of a man-made unifying principle in the spiritual realm today.

All these attempts are symptomatic of the same endless pursuit for a supreme integrative principle in the spiritual world which can be expressed in a simple formula.

### The Unification of Ideals in the Political World

When we turn to the political arena we find the same hopeless struggle for a unifying principle in government. The cry for one world, implies one state and one ruler and one law. That cry will someday be answered by the emergence of the Antichrist.

### The Unifying Principle in Nature is Christ Himself

For the believer there is, of course, no mystery about the unifying principle of the universe. We know that the supreme integrative principle is the Lord Jesus Christ Himself, for "by Him all things consist" or exist. (Col. 1:16-17). He alone keeps the universe intact and operating as it does. He embodies in Himself the laws of nature and He is the all pervading Presence without Whom the atoms or electrons could not exist or hold together.

"All things were created by Him and for Him." That is the supreme integrative principle of the universe and we are told, "Thou hast created all things and for Thy pleasure they are and were created." (Rev. 4:11). That is the sum total of teleology. Similarly when we come to the element of time we find that Jesus Christ is "the same yesterday and today and for ever." (Heb. 13:8). Here is the supreme integrative principle of time, that is eternity without changes. "They shall perish; but Thou remainest." (Heb. 1:11). And into all this marvelous picture we, as members of His Body and His Church are to have a part, "Christ in you the hope of glory." (Col. 1:27).



We find, then, that the great unifying principle of the universe is revealed to us in the Holy scriptures, and that principle lies in Christ Himself "Who is the image of the invisible God." (Col. 1:15). For the believer this is sufficient.

### The Significance of the Present Intensified Search

We have already noted that the search for a simple formula to explain the universe has been intensified in recent years and this unrest is believed to reflect a deep seated state of dissatisfaction with the older concepts of uniformity and evolution. The reason for the intensified investigations of the present day may be due to the fact that since the days of Hutton and Darwin the mass of knowledge has pyramided to such an enormous extent that uniformity and evolution fail to satisfy the mind any longer. A wealth of detail has accumulated, some of which is inconsistent with the theories of continuity and evolution and men are casting about once more to discover, if possible, a new solution to the problem. No one, of course can predict what the ultimate scientific formula will be. But in the meantime there is certainly no necessity whatever for the believer to compromise with the Truth or seek to reconcile the Word of God with human wisdom. God has said, "I will destroy the wisdom of the wise, and will bring to nothing the understanding of the prudent." (1 Cor. 1:15) Appeasement always ends in surrender and it is as futile in the spiritual and scientific field as in the political world.

As believers our efforts should be directed to reconciling human wisdom with the Word of God and seeking to discover just where the discoveries of science do agree with the Word of God. Where there is conflict we may well be patient. Some of the newer theories of cosmogeny, for example, are so fantastic that C. S. Lewis suggests that we may be nearing the end of the scientific age. This is quite possible. The way in which philosophers and scientists are setting forth rival views and contradicting each other only reveals the human necessity for a revelation which is verbally inspired and which is, therefore, dependable and authoritative. "Thy word is truth." (John 17:17).

The Christian who is also a scientist will note with interest each development as it takes place in full assurance of faith that a final reconciliation of science and the Word of God must inevitably emerge as truth is gradually unfolded. Changes of thought are often very rapid and radical these days and in the meantime we may rest content upon the solid foundation of the Holy scriptures. Verbum domini manet.

- 
- (1) Thompson: Science and Common Sense. Longmans, Green & Co., 1937. P. 229.
  - (2) Einstein: Scientific American. April, 1950, p. 48
  - (3) Mott: Biosynthesis. David McKay Co. 1948
  - (4) Rashevsky: University of Chicago Press, 1948
  - (5) Born: Natural Philosophy of Cause and Chance. Oxford University Press, 1949
  - (6) Einstein: The Meaning of Relativity. 3rd Edition. Princeton University Press, 1950
  - (7) Allen: Evolution. By a Medical Scientist. International Christian Crusade, p. 62
  - (8) Buehler & Walker: Scientific Monthly. September, 1949, p. 155
  - (10) Scientific American: June, 1950, p. 58



"The Speckled and Spotted Goats and the Black Lambs Shall Be My Wages"

William J. Schepp

Editor's Introduction:

The following paper was the occasion of considerable comment at the convention. It represents a bio-chemical approach to a problem which has previously been considered only from the biological point of view. For a good statement of the latter case the reader is referred to an article on this subject by Professor Van Haitsma of Calvin College entitled "The Supplanter Undeceived."

Author's Introduction:

Up to this present time, I had hoped arrangements could have been made to attend the Convention and read my paper in person, and then participate in any discussion that might arise. However it does not seem possible now for me to be present. I would be happy to answer by mail any questions arising, in fact it often appears that the real fruit of "papers" is evidenced in the discussion that follows. Surely anything that we can say that would lead to a more carefully searching of the Scriptures is praiseworthy. "It is the glory of God to conceal a thing; but the honor of kings is to search out a matter." Proverbs 25:2

Last week a friend of mine sent me the book "I Have Loved Jacob" by Joseph Hoffman Cohn, D. D. (1948). Dr. Cohn takes exception to the prevalent misrepresentation of Jacob and states "Why is he not known as the Bible really presents him?" "The Birthright," "The Blessing from Isaac" and "Life with Uncle Laban" are some of the opening chapters. I am happy that in my paper the highlights of Jacob's life are quoted direct from the Scriptures. However Dr. Cohn states on page 51 that "The Angel of the Lord told Jacob to use the rods, to test his faith and obedience. And so Jacob took sticks from the trees and peeled them like peppermint sticks. These rods he laid down in the troughs, so when the cattle came to drink they would gaze upon these striped sticks. But Laban could laugh at him, because Laban knew that the science of husbandry had proven that the color of the animals was determined by heredity and not by environment. But God had a law superior to the science of husbandry, and we read a remarkable statement in Genesis 30:39--'The flocks conceived before the rods, and brought forth cattle, ringstreaked, speckled and spotted.'" Then the dream mentioned in Genesis 31:11-12 is quoted.

In my approach I have used the chemistry of the pilled, or bruised, rods as one factor, and their employment at specific times as the resultant factor. In 30:41 the rods were laid in the gutters, and in 30:42 they were not put in. This follows the Scriptural account of the method. The dream which was told to Rachel and Leah in Chapter 31 reveals that the angel of God knew his plans were meeting with success, but there is no Scriptural evidence that the angel of God told Jacob to use this method--in fact the dream terminates with "Now arise, get thee out from this land." (31:13). Away from heathen surroundings, just as God told Abraham in 12:1, "Get thee out of thy country."

I have just read Vol. 2, No. 3, and I got a blessing to see CHRIST preeminent in the midst and prevailing in all the papers. Would that our books of science in our schools and colleges followed such a pattern.

- - - - -

LABAN AND JACOB'S WAGE AGREEMENT: "The Speckled and Spotted Goats and the Black Lambs Shall Be My Wages"

"It shall greatly helpe ye to understand Scripture if thou mark not only what is spoken or wrythen, but of whom and to whom, with what words, at what time, where, and to what intent, with what circumstances, considering what goeth before and what followeth."

Myles Coverdale

The highlights of Jacob's life from birth to his marriage to Laban's daughters is quoted here direct from the Scriptures for authenticity, and to indicate the significance of the marks he selected to brand his wages.

Jacob is introduced in Genesis 25:26 as a twin born after his brother, but "with his hand on Esau's heel," This was a sign to conform a previous declaration made by the Lord Jehovah, "the elder shall serve the younger." (25:23). "And his name was called Jacob 'Ya'agob." (25:26). "ya" for Jehovah and "agob" for heel or supplant--supplanted by Jehovah. An example of Divine Election before birth as stated in Romans 9:11,12, together with a confirming sign at birth. Jacob was smooth, not hairy like his brother, and was loved by his mother. (25:28; 27:11).

Esau was born as a red or ruddy child covered with hair (like a goat-25:25). Esau, Edom and Seir are three names descriptive of these details--Esau "covered with," Edom "red" and Seir "hary as a rough goat." He was probably larger and stronger than his brother Jacob, and became a cunning hunter and a man of the field. Esau was loved by his father because of Isaac's fondness for gamy meat. (25:28)

The birthright. Esau sold his birthright to Jacob for a morsel of meat and bound the transaction with an oath before partaking of the food. (25:33). Esau did not tell his father that he had sold his birthright and was therefore not entitled to the blessing, but after his mother's deceptive plan gained the blessing for Jacob, he said, "Is not he rightly named Jacob? for he hath supplanted me these two times; he took away my birthright; and behold, now he hath taken away my blessing." (27:36). Thus Esau was rightly called "profane" in Hebrews 12:16 in the light of Nu. 30:2 where "profane" is ascribed to one who breaks his word. He did not intend to surrender his birthright even to the point of murder. (27:41)

Isaac entreated the Lord for his wife was barren; the Lord answered, and Rebekah, his wife conceived. (25:21). For this he should have been very thankful to the Lord and hearkened to the declaration and sign of Divine Election. He blessed Jacob thinking it was Esau, but when Esau subsequently arrived and sought the blessing, he said, "Yea, and he (Jacob) shall be blessed." (27:33). The prominent position of food was replaced by the sovereignty of the Lord Jehovah.

Rebekah the mother (and Laban's sister) was told by the Lord that the struggle within her womb was due to twins of different nations and that the elder shall serve the younger. But overhearing Isaac's plan to bless Esau (27:7) she contrived to switch brothers deceiving him in his blindness or darkness. Jacob feared a curse would follow instead of a blessing if the deception was found out, but his mother ordered him to obey her, and said "Upon me be thy curse, my son: only obey my voice." (27:13) Rebekah covered the smooth white skin of Jacob's arms and chest with black goat hair and gave him a dish of savoury goat meat to present to his father for the blessing; and Jacob was blessed above Esau. (27:29).

Laban agreed to accept Jacob's proposition. "I will serve thee seven years for Rachel thy younger daughter." (29:18,19). After the wedding feast, and in the darkness of the night, Laban switched sisters--he slipped the eldest daughter Leah in bed with Jacob, and thus the marriage with Leah was consummated. The "black sheep" of the family was substituted for Rachel with a traditional custom given as an excuse. Thus Laban became "profane" because he broke his word according to the Agreement.

### "The Jews Require A Sign" (I Cor. 1:22)

In view of Jacob's past experience with Esau and Laban, he decided to negotiate an agreement with visible evidence to mark his agreed-upon possessions. This he believed would remove any reflection upon his honesty when the time arrived for him to collect his wages. (30:33). But later the wickedness of Laban was revealed when he discerned the great number of Jacob's marked animals and he sought to murder him, employing as an excuse the theft of his daughters unawares and the images which Rachel had stolen, but which was unknown to Jacob.

### The History of Melanism

One of the papers presented at the American Chemical Society at San Francisco, March 27, to April 1, 1949, bore this title by Drs. J. and M. L. Dufrenoy. They have sent me a complimentary copy of their pamphlet (in French) entitled "From Genesis to the Atomic Bomb," "Every flock has its black sheep," "It is recorded in Genesis that Jacob was successful in breeding Black sheep from white sheep and rams, which, as we now know white to be dominant in sheep, may have been heterozygous." A list of 309 publications is enumerated in the bibliography from 1591 to 1949. And stating that "to account for the occasional birth of 'black babies' among white folk, and for the occurrence of 'white negroes,' Maupertuis formulated laws of heredity, antedating Mendels by a century." "About 1850, melanin was recognized as a pigment, produced in special cells (chromatophores) and bound to a sulfur-containing protein; however, the biochemistry of melanin could not be elucidated before the significance of oxidases had been revealed by G. Bertrand (1896) and that of sulphydryl groups, suspected by Rey-Pailhade (1886), had been established by Hopkins.

Melanin (Gr. "melas" black) is the pigment of negro skin distributed in the more superficial layers, in contrast to the pigment of the white races, which is found principally in the basal cells. In the white races the tanning due to sunburn and its subsequent disappearance reveals a reversible reaction, in contrast with the negro which is irreversible. It is also a pathological pigment associated with tumors and the blood in melanaemia. It is also present in the alkaline black ink of the squid which turns into brown sepia when neutralized with an acid, as for instance Hydrochloric. In hair and in wool it is present in the medulla only in white fibers, and in brown or black hair or wool the outer cells are impregnated. Tyrosine, tryptophan and phenylalanine produce melanin-like compounds upon irradiation with ultraviolet light by an oxidation-reduction system. "The normal pigmentary alterations observed in developing or aging cells, those alterations associated with physiological changes or sex hormones, or the pigmentary disturbances associated with pathological conditions are but visible evidence of a change in the oxidation-reduction potential of melanogenic centers in the cell." (Frank H. Figge 1940).

Black in the Jacob-Laban episode is from the Hebrew word "chum" associated with a "burnt" color in connection with the word "cham" which has been translated Ham. Ham's oldest son Cush was named "kush" which is derived from the Sumerian word "kus" for skin, and Kushly is translated into "Ethiopian" from the Greek "aithiopa"--burnt face. This reminds us of Jer. 13:23: "Can the Ethiopian change his skin, or the leopard his spots?" Leopard is a combination word of "leo" the yellow lion and "pard" the black panther as a symbol also of an unholy alliance--the lion a symbol of the sunlight and the black panther a symbol of the dark unknown after death, the Egyptian priests in death-rite ceremonies wore a black panther skin.

### Jacob's Specific Plan For Breeding Numerous Marked Animals

"And Jacob took branches of fresh white birch, and of benzoin and laurel, pilled white strakes in them, and set them in the gutters in the watering troughs whenever black and white animals were paired at the water-trough, but not for solid-colored pairs."

"Maqqelah Lach Libneh: generally translated as rods of green poplar should be rendered as branches of fresh white (birches).

"Luwz" generally translated as hazel, means "light"--"luz" in Spanish and Portuguese, and "luxus" in Latin. A substance used for lighting as incense.

"Armown" generally translated as "chestnut tree" means "noble" and should be rendered Laurel as Laurel nobilis or Noble Laurel or Bay.

The pilling of rods and white strakes referred to here, can be better understood as a white gummy substance produced only when branches above referred to are bruised, particularly the younger branches and when fresh in the spring of the year.

The white birch exudes a juice having a sweet and somewhat acidulous taste, and the bark contains a camphoraceous body "betulin." The oil of birch has been used externally for skin diseases and internally for relief in venereal diseases. The fresh leaves are used to form a bed in which rheumatic patients lie, and which excites profuse sweating. The white birches grow in groves which reminds us of the groves of Baal and Ashteroth sex worship.

The noble Laurel was sacred to Apollo who was supposed to be over the flocks and herds to ward off plagues, also used for garlands by Greek victors. The Oil of Bays, or noble laurel, has been used as an external stimulant.

Benzoin (luwz). The literature on this article reveals some very startling information. "Many centuries old, this substance was called 'incense of Java,' the words for which in native tongue, were "luban Jawi." The first syllable was dropped and one word made out of the two, 'Banjawi,' which developed through several minute linguistic changes to 'benjui,' 'benzoi,' 'benzoin' and 'benjamin.'" The "luban jawi" or white gum from Java finally corrupted into "benzoin" and "gum benjamin." The wild allspice or fever-bush is the bencoin of Arabia and might have been the parent of the trees now in Java. Only a Bible student could properly understand influences in connection with the corruption of this name. It was near luwz where the youngest son was born and named Ben-oni which means "son of my sorrow" by Rachel, and which was changed by Jacob to Ben-yamen "son of my right hand." Thus ben-oni was the origin of benzoin and ben-yamen of benjamin. Yamen means both right and south, for when facing the East the right hand points to the

south. Even today Yemen in southern Arabia is known as the "Land of the Right Hand" to distinguish it from Syria "The Left-hand Land." And the left hand as well as the north was generally regarded as evil or unknown. When the benzoin branch is bruised a white gum exudes in the form of tears. It is used as a general and local stimulant, tending to elimination by the mucous membranes.

Aromatic and camphoraceous substances as mentioned above at first are Aphrodisiacs and the knowledge of their use was evidently known to Jacob from the heathen practices of Laban and the surrounding country. And Jacob used these substances to induce breeding when mixed pairs presented themselves at the watering trough.

"Stronger" translated from "cesher" which means unholy alliance or mixture.

"Feeble" translated from "ataph" meaning covered over (Ps. 65:13).

Instead of "stronger" a better rendering would be "mixed colors" as black and white, and instead of "feeble" a better rendering would be "solid colored."

Now to answer the final question--Did Jacob breed black or spotted animals from solid-colored ones, perhaps by discovering the secret of emphasizing recessive traits? The maternal impression theory I believe comes from and belongs to mythology.

According to the agreement--first, all existing male and female spotted goats were removed, and any that had some white in it (30:32,35). What remained could well have been solid white and solid black males and females. The solid white were perhaps in the minority in the north mountainous country and the black predominated--this would account for a minor portion of spotted and speckled such as were present originally and removed. All subsequent spotted and speckled offspring were to belong to Jacob as his wages for tending to Laban's flocks and herds.

All the existing black or brown sheep were first removed and any subsequent so marked in the offspring were to belong to Jacob. It is very interesting to note that only in 30:32,33,35 is "sheep" translated from the Hebrew word "keseb." In other places "sheep" is translated from "tson" which name could include goats, as meaning "small grazing animals." The Levitical offering can clarify this problem for in 3:6,7, a peace offering is mentioned as a LAMB, which can be either male or female, and the word "lambs" here has been translated from this same word "keseb." This would explain why the gender was mentioned in connection with the goats and only implied in the sheep by a general name for both sexes. So the black sheep removed were lambs, which would indicate that the adult black sheep remained. Here again the white sheep were evidently in the majority and the black ones in the minority--thus accounting for only a small number of offspring which existed and were removed.

This explanation should lift all confusion--heredity factors are unchangeable but mixtures as in crosses made deliberately can be accounted for. And of course there can be pathological changes and individual changes with experimental substances--such as discovered in including Cobalt when feeding white sheep. But as stated in the Scripture everything produces after its kind and mixtures are the products of man's experiments but not reproducible.

Jacob arrived at Laban's estate as a poor boy and left as a very rich man. His many children and the great increase in flocks and herds was due to the Lord Jehovah's blessing in withholding sickness and abortion--"This twenty years have I been with thee; thy ewes and thy she goats have not cast their young." (31:38).

Jacob's gift to Esau probably represented a number as a tithe and included she goats (ez), he goats (tayish) and ewes (rachel), and rams (ayil), etc. in the ratio of ten females for each male; and very significantly an equal number of sheep and goats as the two different nations. But above all Jacob's animals were spotted, a symbol of the heathen practices prevailing in Laban's country, and reminds us of Hosea 7:8. "Ephraim hath mixed himself among the people and is a cake not turned." When the true Scriptures are mixed with mythology the product is a half-baked philosophy.

Jacob deliberately crossed black and white animals by employing aphrodisiacs whenever they were paired at the watering trough, but withheld stimulants when solid-colored pairs were present. Thus the spotted offspring were greater in number than the solid-colored type.

## ATOMIC FISSION

Alfred C. Eckert

A talk delivered at Goshen College to the A. S. A. meeting sponsored by Wheaton and Goshen College, April 7, 1951.

The subject for tonight is one that was difficult to prepare for a group of this type. As you know, a good deal of the information available on Atomic Fission is classified and one is not free to discuss it. Therefore I intend to build most of the talk around a review of THE ATOMIC AGE AND THE WORD OF GOD by Wilbur Smith.

Permit me to begin by speaking a word of goodwill for the author of THIS ATOMIC AGE AND THE WORD OF GOD. In the most recent issue of the magazine His with which I believe you are all familiar, he has an extensive bibliography to which university and college students can refer for books they might want on various subjects. One of his classifications is "The Bible and Science." This is what he has to say about MODERN SCIENCE AND CHRISTIAN FAITH, the publication of the A.S.A. "In my opinion this is the only satisfactory volume on this important subject written in the last twenty years. Each chapter is by an authority in some field of science. A must book for all Christian students." This may be a bit beside the point as far as our main discussion is concerned tonight but his evaluation of MODERN SCIENCE AND CHRISTIAN FAITH is interesting to all A.S.A. members.

The book THIS ATOMIC AGE AND THE WORD OF GOD started as a sermon which Wilbur Smith preached in 1945 or 1946. It was based on the passage II Peter 2:10-14. You probably have had that passage called to your attention especially in the last few years. II Peter 3:10, "But the day of the Lord will come as a thief in the night in which the heavens shall pass away with a great noise and the elements shall melt with fervent heat the earth also and the works that are therein shall be burned up." After the atomic bombs were dropped in the last war and the news spread, that verse of course became quite interesting to Christian people in many places. Wilbur Smith preached a sermon on it which was of sufficient interest that it was put out in pamphlet form and many thousand copies sold. During the time that those copies were selling he went to work and wrote this book pretty much around the sermon. According to the author's introduction his principal objectives of which we find two were: (1) to inspire the reader to preach the gospel and (2) to help the reader to be prepared to give a reason for the hope that is within him. These are, of course, very commendable objectives.

As he made up the book he was guided by several things which I would like to read rather directly out of his introduction. First, the first question which he attempts to answer in this publication is this: "Does the Bible throw any light upon this hour in which we live?" He outlines how we have come into the Atomic Age and are faced with many problems and various points of view. Many philosophies that we have held seem very inadequate to the present time. "Does the Bible throw any light upon this world in which we live?" Another objective or guiding principle is found in his introduction. He states that in many cases Christians have found it interesting to speculate on prophecy. Mr. Smith properly has very little time for that sort of things and he says this specifically, "Date setting is for me anathema." He mentions that during the past years he has written very little about prophecy and says he has been kept from the nonsense of identifying Mussolini with anti-christ, etc. In other words he emphasizes that he is not writing this book as a speculative venture and is not interested in speculating on questions of prophecy.

Third, he says this about his writing: "I shrink personally from long discussions of Biblical technicalities which cannot possibly have any relations to one's own convictions nor bearing upon one's conduct. What I have written I trust has been put to the test of a less of incessant activity." So he is trying to write a book that has some practical value rather than something that involves a number of somewhat abstract technicalities.

Fourth, here I believe he states his background very concisely. "I have tried to read all that is important of this enormous literature of the atomic bomb and the development of atomic energy with the exception of some of the more technical studies in the field of nuclear fission.

The foregoing things he has tried to do. He lists four things that he has definitely not tried to do in this volume. First, he did not attempt to write a history of the development of the atomic theory in the twentieth century, feeling of course that is for someone else to do. Second, "I am not attempting to rehearse the story of Hiroshima and Bikini." Third, "I am not attempting to bring my readers up-to-date on the discussions of the final control on atomic energy as they take place in the United Nations." And finally, "I am not proposing some plan for the control of atomic energy."

Therein are the things he is trying to do and the things he is not trying to do. Of most importance in this introduction is the first question that he asked, "Does the Bible throw any light on this hour in which we live?" As he develops the book, that question probably stands above other things that he attempts to work out.

With regard to the general make-up of the book I might mention that it has 19 chapters, 5 appendices and 3 indexes. The chapters cover quite a variety of subjects. He starts, as we might expect, with more or less an orientation of the atomic age, its significance, spheres of life that it effects, etc. He then goes back into history and traces the development of the concept of atoms from the early Greek philosophers. Following these philosophers there is a gap of about eighteen centuries, until the atomic idea became prominent again and takes up and traces its development up to the beginning of this century, and briefly thereafter until the present. Remember, one of the things he did not try to do was trace its development through the present century. That becomes too highly technical.

Following this historical treatment comes the chapter in which was the original sermon. It is just a few pages of the present volume. In this chapter he discusses the verses from the second epistle of Peter.

After that comes a chapter in which he discusses a number of other peoples' ideas of the meaning of those verses. They are mainly of historical interest. They are ideas which were published before the release of atomic energy had been known.

In the remainder of the book, there are several chapters which for the most part don't seem to have any great relationship one with the other, certainly no sequence. We might think of them as a number of essays on various Biblical subjects and concepts that have some relation to atomic energy. A couple of examples are the chapter on Sodom and Gomorrah, and the one on Wars and Rumors of Wars, etc. Finally, the last three chapters have a sequence of a sort. One of them points out the need of the human race for regeneration, and then the next chapter is entitled, "The Time is Short." The final chapter is entitled "Victory Through Christ."



That briefly then is the content of the book, but the style in which it is written should be appraised. His style I would call philosophical. Philosophers might disagree with my use of the term, but a philosophical writing I have generally found rather indirect; it spends a good deal of time generalizing and qualifying statements before coming to the point. That is my impression of the style that Dr. Smith has used here. Also by illustration of the style I might mention a writing technique. The second sentence in the first chapter has something like 128 words in it. The record length per sentence that I found in going through the book had something like 152 words in it. In other words the book is not easy reading and is in a style that you would find, at least I found, had to be read slowly and deliberately in order to get the continuity for what was being presented. (Of course, I do not count the words in every sentence I read; these very long sentences forced themselves on me).

Next, in our discussion I would like to give you what I call a sentence condensation of the book, in other words each chapter boiled down to one sentence. In so doing we will try to give you that much of an idea of the sequence and content of the book.

The discovery of atomic energy affects many spheres of life and will determine the history of our world as no other single discovery.

It is most significant that writers seemed forced to go to the Bible for the phrases they feel compelled to use in connection with discussion of the impact of atomic energy on the course of civilization.

After the brilliant conclusions of the ancient philosophers, nothing more was learned about atomic structure for about eighteen centuries.

At the beginning of the nineteenth century physicists broke away from the idea of four elements and the trend toward our present concept of elements began.

Every intelligent man certainly desires to know something of the structure of atoms and the meaning of nuclear fission in view of the great importance of the subject today.

Peter gives us a description of the character of the final conflagration.

Before the release of atomic energy the church assigned various interesting interpretations of II Peter 3:10.

That Peter by using the Greek word lanos predicted the fission of uranium is an unjustified conclusion.

The international state will mean tyranny over mens' souls, bodies and minds.

World wars and atomic weapons drive men to insist on world government which will bring a world ruler.

As the importance of the air for travel and communication in warfare becomes greater this age swiftly prepares for that final struggle between the Prince of the Power of the Air and the Lord of Lords.

Our Lord only wants talk of war as such and at that time predicts wars to the end.

Until 1945 men hiding in caves and rocks in the mountains as described by John in the book of Revelation was hardly imaginable but it becomes a primary factor in protection from an attack of the atomic bomb.

It is doubtful if prior to 1945 a scientist has ever written an article with such a title as Dr. H. C. Urey's, "I Am A Frightened Man."

What God did to Sodom and Gomorrah is a type of greater judgment by fire.

A revival to bring about a regenerated humanity must derive from the Spirit of God.

The atomic bomb has altered the sneering attitude of many toward the possibility of divine judgment.

For victory over the world is in Christ as Creator, Conqueror and Consumator.

With that much about the book in general, I would like to turn next and look a little more carefully at several parts that I feel are of a special interest. Dr. Smith's definite Biblical approach to this subject is commendable. His approach is illustrated especially in two chapters, one of which he entitled "Wars and Rumors of Wars." In that chapter he pointed out that the prophecy which our Lord made in connection with the Olivet discourse is one that has been very much ignored and much misunderstood. At the time of the Olivet discourse our Lord made some prophecies relating to something that took place about forty years later (about A.D. 70), the destruction of Jerusalem. Many people have been prone to assign all of that discourse to prophecy of the destruction of Jerusalem. Dr. Smith points out the absurdity of this and also of course points out how Christ says that there will be wars and rumors of wars up to the time of His return which was not A.D. 70. He gives illustrations of some very amazing cases where commentators have just blatenly ignored that passage as they were commenting on the passage immediately preceding and following. He then presents some illustrations of absolute misinterpretation and cases of announcements that outstanding men have made which are utterly ridiculous in the face of these verses. In many cases, these were quite frequent especially at the turn of this century and even up to before 1939 many people thought we were heading toward an era of world peace.

Dr. Smith also points out the amazing knowledge that Christ had making this prophecy because the Old Testament prophets had prophesied a time of peace to be coming in the future and of course Christ pointed out that the time of peace was not at hand even though he was called the Prince of Peace. Those prophecies had to be interpreted in somewhat a different light. So he illustrates to me his Biblical Christian approach in department from the wishful thinking that many held especially earlier in this century that we are headed for an era of world peace at a time like this. It is not difficult today to take the side that Dr. Smith supports.

Another chapter in which the Biblical Christian view is very prominent is the one which points out the need for a regenerated humanity and points out that that need is not going to be attained through education and culture, etc. The required regeneration is available only through the Spirit of God and through the acceptance of Christ and His Gospel and the acceptance of Christ as a personal Savior from sin. He used the illustration of Germany, which was one of the best educated nations in the world and yet those people allowed their government to carry on some of the most beastly activity that the world has ever seen. This of course supports from Scriptural claim that regeneration must come from God and not from man's own efforts.

You certainly will be interested in knowing what was the content of the sermon which grew up to be a book. The sermon was mainly a discussion of the meaning of several words. Elements, dissolution, great noise and fervent heat. In the sermon Dr. Smith of course points out how an atomic explosion fits the general description of what Peter was describing many years ago and indicates that it is

very possible that that is the prophesied end of the world, namely that the world will be destroyed by dissolution of the elements by actual atomic fission, etc.

The following is very fascinating because it reviews, as I mentioned before different ideas that people had before the advent of atomic energy as to the meaning of these verses in II Peter. One of the very early church fathers in the second century interpreted that prophecy to refer to a fusion. He used the illustration as lead is melted in fire, the earth would melt and would in that way dissolve. They say in the light of the release of atomic energy that something much more drastic than melting is what is predicted here. There was another writer from the nineteenth century who went to great length to explain how the final conflagration would be the result of atmospheric moisture decomposing and then recombining. You know hydrogen and oxygen combine very violently. He believed that the moisture of the atmosphere was going to decompose and then recombine again with this great violence which would make a great noise etc. To me this is an excellent example of the value of scientific investigation helping us to understand better what the Scriptures mean. We can't say dogmatically that Peter is predicting an atomic disintegration for the end of the world, but, with a knowledge of atomic energy, we certainly do have a much greater appreciation of the picture he painted than these church fathers and writers of the past centuries had since they had to try to picture such a conflagration in terms of things that they knew at that time.

There were three chapters that I picked out as being of special interest to me for various reasons. I would like to spend a little time on each of these.

The second chapter is entitled "The Atomic Bomb Demands Biblical Phrases." Dr. Smith pointed out that shortly after the release of atomic energy, as various people wrote their impressions and discussed it they were continually bringing in Biblical phrases to help express themselves. His first illustration was one in which he quoted the President of the United States as finishing up one of his chats with the remark that "May the God of peace keep us from what's ahead of us," etc. "May the God of peace protect us," etc. Of course the "God of Peace" being a Biblical concept, Dr. Smith very appropriately pointed out that it was very inappropriate for us to call upon the God of peace to keep us out of trouble in the future when we continually reject Him and reject His way and His world. In our United Nations meetings we don't even call upon Him for help, yet the President gets up and expects the "God of Peace" to protect us in the future! There were many other Biblical phrases whose use Dr. Smith indicated.

Again, Dr. Smith illustrated his Biblical Christian approach in summing up the significance of this use of Biblical terminology by saying that "of course many people take courage from the fact that the Bible had these allusions made to it." But he pointed out that in many, nearly all these cases, the allusions to Scripture very obviously were of such a nature that the people using them did not show any evidence of understanding their true meaning nor of understanding their context nor of understanding the scripture. In some cases they almost bordered on blasphemy by the way they were used and he saw very little reason to take courage in that fact. He did indicate that you don't see many references to secular writers to help put across these concepts. The Scripture seems to be virtually the only writing that has phrases adequate to make these descriptions and that certainly puts a good deal of emphasis on the authenticity of the Scripture and its dignity, etc. This fact does not give any indication to him that people are returning to the Scripture in a Biblical sense.

Then there comes the chapter that is probably the most interest to us here. "The Structure of the Atom and the Meaning of Nuclear Fission." This chapter was a very great disappointment. It is very difficult for me to understand why someone of the scholarship and scholarly standing of Dr. Smith, someone with the scholarly approach that he usually makes would write a chapter like this. He's not a scientist and he makes no claims to be a scientist, but in this chapter he is attempting to interpret science to people who are not technically minded. This is a difficult task for a scientist who knows his subject but the difficulties are multiplied for a layman. Dr. Smith in his treatment of this chapter gives very clear evidence of having himself a very muddled idea of certain scientific concepts. He commits some errors that I'm sure a good high school teacher could have cleared up for him had he consulted and submitted the manuscript for appraisal. I repeat, I simply can't understand why a man of his standing would jump into a field that he knows he's not trained in, write a chapter on it and apparently publish it without having conferred with someone competent to check the material for specific errors. I went through the chapter and marked the things that he revealed were not just clear to him.

He has a very muddled conception of the significance of atomic weights and atomic numbers. In one paragraph he mentions that all atoms of a particular element have the same weight, and then a subsequent paragraph he talks about isotopes with no indication that he understands the meaning of the term. In his presentation of astronomically large numbers, he has made additional errors. These are things that could easily happen, and yet they would have been detected by any good high school teacher, had such read the manuscript. I will say without question the trend of thought is not upset. If the errors had been corrected his trend of thought, his argument wouldn't have been changed a bit. The errors are in general that minor, but still it has the effect on the scientific reader of casting doubt on the writer's competence in other fields. It shook my confidence about what he has to say about other things when in a field where I can judge his accuracy, I find that he is not accurate. This was very disappointing and it is very unfortunate for a book that for the most part presents some very interesting material. It is unfortunate that we have in a book of this quality a chapter like this that detracts from one's feeling that the book is written on a basis of good scholarship and good authority. One other error that he made that is a little bit hard for a chemist to forgive: he mentioned that the Manhattan project was a physics project. That's one that we chemists find very hard to swallow.

We turn now to what is a little more pleasant and commendable, a chapter dealing with Greek words from which Uranium was derived. In the passage in Peter, this Greek word Uranus is used. It is obviously related to Uranium. Dr. Smith says that there have been people who pointed this out and said, "Now look here, Peter was really a lot smarter than you think. He not only pictured the world ending with an atomic explosion but he knew that Uranium was to be the explosive material." Dr. Smith takes the commendable stand of pointing out that such a conclusion is entirely unjustified. The first word, he claims, is the word very frequently used for heavens. It was a very natural word to use in this particular place and probably the most logical word to use entirely aside from any considerations of "Uranium" and "Uranus." He also further explains the naming of Uranus and Uranium. The naming of the planet Uranus I understand, was arrived at rather accidentally. He allows the possibility that the Lord guided the people who named this element and named the planet after which this element was named. Perhaps He did guide them to have it that name but such looks very unlikely to Dr. Smith. I

feel it is a very commendable stand for him to point out a case of almost 100 per cent speculation of prophecy.

Finally I wish to sum up my appraisal of the book as follows: I found it interesting to read. It is inspirational. Dr. Smith summarizes various things in our atomic age and showed that the Scriptures do have a very definite application to the time in which we live. The Scripture is not out-moded as many of the writings that were prominent fifty years ago. The reading is difficult and the book is scientifically inaccurate in a number of places.

In closing it seems appropriate to list several books on atomic energy. These books contain everything that can be told, that is with the exception of certain technical details that have been put out in various scientific monographs. The first one of course that I will mention is the famous report by H. D. Smythe entitled "Atomic Energy for Military Purposes" published in 1945 by the Princeton University Press. This was the first official release and a good half of it describes the history of the Manhattan project. The rest of it consists of certain scientific facts that can be told about atomic energy. The Smythe report is mainly of historic interest now because it has been superseded.

A book came out last year published by the Atomic Energy Commission and handled through the Superintendent of Documents, called "The Effects of Atomic Weapons." This was intended to be a book of information on which several defence authorities could base their plans for devising defenses against atomic attacks. More recently another official release by the Atomic Energy Commission written by Glasstone is entitled "Source Book of Atomic Energy." It's published by Standard Publishers and is available at a remarkably low price.

- - - - -

Discussion:

Thank you very much Dr. Eckert for this interesting discussion. Are there any questions?

Mr. Kratz: Dr. Eckert pointed out that the author went into the field of science to prove the truths of the Bible, now knowing science. What about scientists who try to teach the Bible?

Dr. Eckert: Your question I think is a bit rhetorical. You anticipate the answer. We all know the answer of course. Scientists are not theologians and if we try to write on theological subjects we probably will be open to a great deal of criticism. I would emphasize again that if any of us were going to do such a thing, I suggest we go to a theologian to check our manuscript to see that it makes sense before we publish it. We might take a lesson from the mistakes theologians have made in the field of science and see that we don't make the same mistakes in the field of theology. Does that answer your question?

Mr. Kratz: But is it possible for us to get up before a scientist and say something about the Bible?

Dr. Eckert: You mean is it possible for us to understand the Bible? Yes, if we spend time on it. I realize that it takes a life time to assimilate some things. The important things about the Scripture are open to those of us who seek the Lord and seek His revelation to us. The fundamental fact is that man is a lost sinner and we need a Saviour.

- - - - -