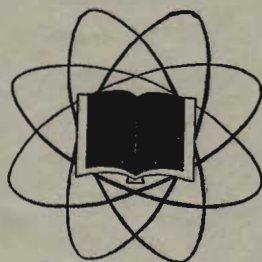


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The fear of the Lord is the beginning of wisdom. Psalm 111:10

Volume 6

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No. 4

The American Scientific Affiliation

(INCORPORATED)

The American Scientific Affiliation was organized in 1941 by a group of Christian men of science. The purpose of the organization is to study those topics germane to the conviction that the frameworks of scientific knowledge and a conservative Christian faith are compatible.

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TABLE OF CONTENTS

| | |
|--|----|
| New Members | 2 |
| Biblicism and Science | 3 |
| Chester K. Lehman, Th.D. Dean Eastern Mennonite College, Harrisonburg, Va. | |
| The Principle of Growth As An Obsession | 8 |
| William J. Tinkle, Ph.D. | |
| The Psychological Implications of the New Birth | 10 |
| Norvell L. Peterson, M. D. | |
| Anthropology | 13 |
| Archaeology | 14 |
| Biology | 15 |
| Philosophy | 17 |
| Psychology | 18 |
| Sociology | 18 |
| Letters | 19 |
| News Notes | 20 |

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New Members

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Marie C. Cameron, Box 901, San Jose, Costa Rica, has been in charge of El Hospital Biblico for the past 25 years. She is with the Latin American Mission, Inc., has an M.D. from Manitoba University, Canada.

William F. Campbell, 3169 W. 32nd St., Cleveland 3, Ohio. Received M.D. degree from Western Reserve University, now serving surgical residency internship at Cleveland City Hospital.

George P. Dillard is Chief of Staff, Baraka T.B. Sanatorium, Bethlehem, Hashemite Kingdom of Jordan, under the Independent Board of Presbyterian Foreign Missions. Received M.D. degree from Chicago Medical School and took further work at Columbia Bible College Graduate School of Missions.

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Biblicism and Science*

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I am very happy for the privilege of addressing the American Scientific Affiliation. It gives me the opportunity of making a few comments relative to the organization. The two concerns expressed in the A. S. A. handbook, that with student's faith and that with unscientific defense of the Bible, are certainly in order. The plans of the Affiliation give promise of great impacts upon students, Bible teachers, ministers, scientists and the public in general.

An area of service which I venture to suggest for consideration by your Affiliation is that of carrying Christian viewpoints of science into other scientific organizations. Papers such as are presented in this meeting should find their way into other scientific circles. Is it not possible for the whole question of evolution to be reopened, or for a first class interpretation of the creation account to gain a hearing? The genius of Christianity is that of a prophetic mission in the world. This finds application in the propagation of true science as well as in evangelism.

On receiving the very kind invitation to serve on this program I felt at once the pressure of two concerns. The first is the need of holding to a Biblicism which will command the respect both of the most scrutinizing and critical scientific mind, as well as the liberal theologian. The second is an equal urgency of adhering to objective science which will win the confidence of the most thoroughgoing theologian and also the most scholarly scientist. The first has to do with the great science of interpretation, known in theological circles as hermeneutics. This science deals with the task of reproducing in our minds the thoughts which the Biblical writers meant to convey. The second concern centers in the need of distinguishing sharply between science and philosophy, objective facts and suppositions. When strict attention is given on the one side to Biblical hermeneutics and on the other to observable data of science, a way should be found for the reconciliation of the Bible and science.

In this paper I am centering my thinking on the first of these, Biblicism, as it bears on the interpretation of the creation account.

A word as to the meaning of Biblicism. It is taken to mean an adherence to the letter of the Bible. According to the Century Dictionary a Biblicist is "one who adheres to the Bible as the sole rule of faith and practice as opposed to a scholastic, who professed to bring all doctrines of faith to the test of philosophy." The

Swiss Brethren of the 16th century held to Biblicism as against the prevailing Mysticism. They accepted no doctrine which found no support in the Scriptures. At the present time Biblicism stands in disrepute in the hands of liberalism and neo-orthodoxy, as holding to a bald literalism which is too naive to recognize the difficulties of Bible interpretation. The Biblicist is regarded as slavishly adhering to the letter of the Bible and as unable to grasp problems involved in understanding an ancient Book. But this does not describe true Biblicism. The sort of Biblicism to which we should hold is marked by such characteristics as:

1. Belief in the origin of the Bible according to its own claims. All scripture is *theopneustos*, God breathed. "Men moved by the Holy Spirit spoke from God." (2 Pet. 1:21)

2. Belief in the Biblical claims to authenticity and authority. "Scripture cannot be broken." Jno. 10:35 "All scripture is . . . profitable for teaching, for reproof, for correction, and for training in righteousness."

3. Belief in scientific Biblical criticism. In the field of criticism there is extraordinary need to follow the method of objective science. When all evidence as to date, composition, authorship, and purpose of the Books are carefully assembled and evaluated, objective science knows no other method than to believe the evidences. I am still of the opinion that the commonly accepted literary analysis of the Pentateuch has moved more on the basis of philosophy than on objective science.

The Need for Sound Principles of Interpretation

The most strategic point of common interest between Biblicism and science is found in the Book of Genesis. In simple, grand, and awe-inspiring language this book presents the Creation, primeval history, the Flood, the Table of Nations, and the beginnings of Hebrew history. The unity of Genesis is manifest. As the narrative proceeds, the historical character of the record finds increasing confirmation from the annals of other nations. If the latter part of the book is found to be historical by reason of other historical records, what hinders the acceptance of the historical character of the opening chapters?

The problem is heightened when it is observed that no human eye saw the events of creation. By divine revelation at some point whether to Adam and Eve or to some one later man learned of this wondrous act of God. Dr. Kyle has stated the implications of this fact as follows,

* An address given at a general session of the Ninth Annual Meeting of the American Scientific Affiliation, Harrisonburg, Virginia, August 24-27, 1954

"This (revelatory) theory starts from the idea that Genesis account is not genetically an account of creation directly, but an account of the revelation of creation. Whenever, wherever, and by what means soever, the account of creation was first given to the world, a true account, it must have been a revelation from God. Nobody of this world was present at creation to make a record, hence nobody can tell anything historically about creation; and as science founded upon the laws of nature cannot go behind the laws which creation brought into existence, it is impossible to have a record of what happened, unless God reveal it. So, if the account of creation in Genesis be a real account of creation, it must be a revelation. Very well, how did God reveal it to man? God might either tell him, or show him, or both. If he showed him, it must be by vision, for creation was already finished and could not itself be witnessed.

This revelatory theory is that God revealed creation to man in visions giving six looks in upon the work of creation in six successive visions, each one observing creation at a successive stage in its progress, but not necessarily limited in any way by our idea of time as is true of all visions. In our dreams we may in a few minutes pass through years of dreamland life. So God might reveal to man in a brief vision the passing events of ages of creation. Now as the one receiving the vision would close his eyes to this world as he went into the vision and open them upon the world again as he came out of the vision, each vision would naturally be described by the curious and puzzling order of expression, 'the evening and the morning were the first day, second day, etc.' This would account for this very peculiar phrase in this account, though it occurs nowhere else in Scripture."¹

True Biblicism needs to take into account then this great fact of a creation record given solely by revelation and completely detached from human observation. This may well serve as a way of approach to an interpretation that will commend itself to scrutinizing science. Since the problem resolves itself into one of interpretation, the science of interpretation needs to be re-examined.

Perhaps need exists for reminding us that since hermeneutics is a science, new data having to do with interpretation will affect the principles of interpretation. Obviously the meaning of Scripture does not change although there may be change, growth, and progress in our understanding of Scripture. Evidence of this is easily found in a comparison of Bengel (1742), Matthew Henry, Meyer, Lightfoot, Dean Alford, Westcott, Lenski, and Leupold (1942). The interpretation of Scripture cannot be frozen. Progress in the knowledge of language, archaeological discoveries, and new insights into truth all affect hermeneutical principles and should lead to a more accurate understanding of the written Word. Advances in the science of interpretation naturally result in progress in the art of interpretation. Is it possible that conservative thought in mid 20th century is content to believe that after Robert Dick Wilson, B. B. Warfield, J. D. Davis, A. T. Robertson and others of like stature have spoken no further progress is possible? Surely these men advanced beyond James Orr, William Henry Green, Edwin Cone Bissell, and Charles Hodge of the preceding generation.

This necessary development of hermeneutics becomes clearer still when we realize that interpretation is a process of reproduction. G. H. Schodde has described this process very clearly as follows, "In nearly all cases, interpretation has in mind the thoughts of another. . . A person has interpreted the thoughts of another when he has in his own mind a correct reproduction or photograph of the thought as it was conceived in the mind of the original writer or speaker. . . The moment the Bible student has in his own mind what was in the mind of the author or authors of the Biblical books when these were written, he has interpreted the thought of the Scriptures."²

Very clearly this process presents many difficulties. First and foremost is that of bridging the gap between our way of thinking and that of Moses. It is that of appreciating the difference between Occidental and Oriental minds. By way of illustration Kyle tells a story of the Oriental notion of chronology as follows:

"One of these desert travelers went with a missionary friend to visit one of the 10,000 mud villages in the valley of the Nile. The night was not a restful one in a native home. The next morning the traveler wished to return as soon as possible to the boat on the Nile. The missionary however, knowing the demands of courtesy, insisted that they must not go until after breakfast, but expressed the hope that breakfast might be expedited. 'Oh,' said the host, 'breakfast is just ready.' One hour and a half after that time by the traveler's watch, a match was struck to kindle the fire to cook the breakfast. And sometime later still, a cow was driven into the court of the house to be milked to provide the milk to cook the rice to make the breakfast. Was the host untruthful? Not at all; he did not reckon by time, but by events. He had no way of determining the passage of time. When he said 'Breakfast is just ready,' he meant it was the next thing in the household economy, that they would do nothing else until that thing was done, and that everything done was to that end. That is to say he reckoned only by events."³

Recognition of this difficulty imposes upon the interpreter painstaking effort to attempt to understand the Biblical writer's thought.

In order that this reproductive process may be more fully appreciated let us study some of the crucial points of interpretation of the creation account.

1. General view of the Creation Account.

John R. Sampey of Southern Baptist fame says: "We must not make the mistake of assuming that the first chapter of Genesis is a scientific treatise. It is rather a great religious poem celebrating the glory of God as the Creator of all things. We should study Genesis as a *religious* book, if we would get the knowledge and uplift it was intended to impart."⁴

In a note entitled, "How to Interpret the First Chapter of Genesis," Albertus Pieters writes:

"(1) That the first task of the interpreter is to discover what the original writer had in mind.

(2) That the original writer of this record, whoever he was, and whenever he lived, was surely a man of mature mind and ordinary common sense, knowing what all men know, and intending to write sense, not nonsense. This is important when we find him telling of light before the creation of the sun, describing the 'firma-

ment' and 'the waters above the firmament,' numbering days when there was not yet any sunrise or sunset, relating the growth of trees in one day, and that animals came out of the earth, or that all animals were to eat herbs.

(3) That the language in which this narrative is composed is 'phenomenal,' or popular language, not the language of science. By this we mean that the facts are stated as they appeared to the eye, without any intention to express a judgment as to whether they were in reality what they appeared to be. We use this form of expression when we say that the sun rises and sets."⁵

Dr. Melvin Grove Kyle gives his views as follows:

"The account of creation in Genesis is simply a narrative in popular language from the standpoint of a beholder, and that moreover in a language devoid of technical terms. Common words had to be made to do duty as technical terms, their technical meaning only indicated by the context. The problem of a first-hand study of the Genesis account of creation from the text itself, the only study that has original value, is simply the problem of determining what scientific facts are described in the popular language of the narrative."⁶

Each of these scholars faced honestly and frankly the interpreter's problem. Each believes in Biblical inspiration as well as in the historicity of the narrative. They are attempting to understand the record as Moses intended it to be understood. True Biblicism would say that simple literalism not only robs the narrative of its majesty and profound meaning, but also imposes upon the interpreter some unanswerable problems. Cast into the form of a "religious poem" the account is not robbed of its historical character. This view of the record is most consonant with that of regarding Genesis as a religious book.

2. The Relation of Verse 1 to the Rest of the Chapter.

True Biblicism takes pains to understand whether this verse is intended to be a *summary* of what follows or whether it states something that is *independent* of the six creative days. Pieters in holding to the latter alternative gives in support the following: "If we construe this verse as summarizing what follows, without introducing anything independent of it, we find nowhere any original creative act whereby the universe comes into being; for from the beginning of the second verse the world is already there, and nothing occurs but the re-making of it."⁷

Kyle's comment is of the same tenor. "This first statement of the narrative gives account of the great act of creative power which stands by itself; it was bringing into existence all the materials of the universe. This is the Biblical representation of creation 'in the beginning.'"⁸

Note also H. C. Leupold's view on this question.

"Now is this first verse a heading or a title? By no means; for how could the second verse attach itself to a heading by an 'and'? Or is this first verse a summary statement akin to a title, after the Hebrew manner of narrative which likes to present a summary account like a newspaper heading, giving the gist of the entire event? Again, No. For if creation began with light and then with the organizing of existing material, the question would crowd persistently to the forefront: but how did this original material come into being? for v. 1 could not be

a record of its origin, because it would be counted as a summary account of the things unfolded throughout the rest of the chapter. Verse one is the record of the first part of the work brought into being on the first day: first the heavens and the earth in a basic form as to their material, then light. These two things constitute what God created on the first day."⁹

One is conscious of the fine discernment necessary at this point. Kyle very properly senses that verse 1 is stating the great act of creative power which stands by itself. The following verses seem to continue the account of God's creative work in the way of presupposing the primary work of verse 1. There are the moving of the Spirit of God over the face of the waters, the fiat of light and of a firmament, the gathering together of the waters under the heavens, and the making of the two great lights and the setting of them in the firmament,—all are dependent on the original act through which the heavens and the earth were brought into existence.

3. The Formless Earth.

True Biblicism naturally probes into the meaning of "without form and void". Did the creative act of verse 1 result in a completed creation which later *became* without form and void so that what follows is "a made-over world with a long previous history"? Or had the creative act of verse 1 not progressed beyond the stage of "wasteness" and "emptiness"?

A number of scholars from Dr. Thomas R. Chalmers (1804) on including Dr. James G. Murphy a half century later, and Dr. C. I. Scofield of this century, held to the former. Apparently Chalmers was influenced chiefly by the geological claims of the time, Murphy by the possible sense of the verb *hayah, became*, for *was*, and Scofield by appeal to other passages. Scofield's note follows: "Jer. 4:23-26, Isa. 24:1 and 45:18 clearly indicate that the earth had undergone a cataclysmic change as the result of a divine judgment. The face of the earth bears everywhere the marks of such a catastrophe. There are not wanting intimations which connect it with a previous testing and fall of angels."¹⁰

With all due respect to these scholars true Biblicism must inquire, "Is this what the author of Genesis intended to tell us? Does verse 1 give hint of a fully created world with plants, animals, and even a Pre-Adamite race? Does verse 2 tell of a destruction of all this with a new beginning in verse 3? Does the author mean to concentrate into a verse and a half the story of a creation with uncounted myriads of years of existence issuing in a judgment of making waste and void?" The question is not whether this world could have been used one or any number of times previous to the present creation but whether the present creation is that which had its beginning in verse 1. Careful discriminating thought concludes with Dr. Pieters that Restorationism is an interesting speculation, but, has absolutely no Scriptural support. Kyle

also insists that it is impossible to show that the Hebrew verb *hayah* has the sense *became* in this place. Far too great a superstructure has been based upon the precarious foundation of an unusual sense of *hayah*. No evidence from geology can force upon the Bible a meaning which violates true principles of interpretation.

4. The Creation of Light.

When were the sun, moon, and stars created? This question puts Biblicism to real test. Bald literalism insists that the heavenly bodies were *created* on the fourth day. But is this the thought that the writer intended to convey? If this is a "great religious poem celebrating the glory of God as the Creator of all things," as Sampey so beautifully said, we may need to probe deeper than bald literalism permits.

A significant phenomenon which may suggest the true meaning of the language lies in the symmetry and grouping of the Hebrew narrative. This "may be plausibly explained as intentional arrangement," says Dr. John D. Davis. Describing this arrangement, he adds:

"The 6 days form 2 interrelated groups: the 1st day saw light, and the 4th day, the 1st of the 2d group, saw the luminaries; on the 2d day the waters were divided and the sky appeared and on the 2d day of the other group fish were divinely willed in the waters and fowl to fly in the expanse of the sky; on the 3d day dry land and vegetation were decreed, and on the corresponding day of the 2d group land animals, including man, were made, and vegetation was granted them for food."¹¹

What then is the possible significance of this arrangement as it bears on the creation of the heavenly bodies? H. C. Leupold gives a very sensible answer, a splendid example of true Biblicism, as follows:

"At once now the next problem suggests itself: how do the 'luminaries' stand related to the light which was created on the first day? With this is involved a second question: how do these luminaries stand related to the heavens, which were created on the first day (v. 1)? The analogy of 'the earth' created simultaneously with 'the heavens' (v. 1) and its equipment and arrangement up till this point through v. 2-13 points in the proper direction. In other words, the earth is created in the rough, subject to certain deficiencies or incompletenesses which are removed one by one through the following days; similarly the heavens are created in the rough, heavenly bodies in vast spaces, not yet functioning as they shall later. What still remains to be done in and with them is now completed on the fourth day. The sun, moon and stars were in existence but were not yet doing the work which gets to be theirs in the fourth day's work. Light was in existence, but now these heavenly bodies came to be the ones that bear this light in themselves—'light-bearers,' 'luminaries,' *meo: oth*. Heavenly bodies were in existence, but from this point onward they begin to serve a definite purpose in reference to the earth."¹²

Whether or not one agrees with Leupold, the approach is of the sort that commands respect. It is a conscientious effort to reproduce the thought of the original author.

5. The Meaning of the Word "Day".

Another of the perplexing problems for Biblicism

to study is the meaning of the word *day* in the creation account. The implication of this problem for Biblicism is well stated by Kyle as follows:

"Now this first day and each succeeding day of the creation period, how long? What is the meaning of the word *day* in this account of creation? It is not uneducated people alone who say that a day is a day, a twenty-four hour period. A distinguished Old Testament teacher once assured me that he had examined every instance of the use of the Hebrew word for day in the whole Bible and that it never meant anything else than a day of twenty-four hours. Such an opinion not only suits an ignorant literalism, but is also quite convenient for those who are neither ignorant nor literalists, but who wish to make out a good case for the legendary character of the Genesis story of creation, and that it is wholly in conflict with science. In these studies we are trying to learn exactly what the Bible actually teaches and not what anybody thinks it may teach or ought to teach. We are neither to read anything into the text, nor anything out of it. So concerning the meaning of this word *day*, let us see for ourselves. We need to know the meaning of the word in this Genesis account of creation and will not then find it necessary to examine the use of the word elsewhere in the Bible.

"In Genesis 1:5, we read that God divided the light from the darkness and the light he called day and the darkness he called night.' There can be no doubt here; certainly in this instance, 'the light' means daylight, a period of twelve hours more or less. Immediately, in the very next words, it is added, 'And the evening and the morning were the first day,' where both the light and the darkness are included in the meaning of the word 'day' manifestly the whole twenty-four hours. Thus 'day' is certainly used in two very different senses in this one verse, which is a morsel for both the extreme literalists and the advocates of a legendary element in the account to chew over. The word *day* is thus used in this part of the account exactly as we are accustomed to use it in ordinary conversation every day of life. Nor is this all, for if we look forward only a little to the summary account of creation in Gen. 2:4, where the whole of creation is gathered up in a few sentences, mention is made of the 'day that the Lord God made the earth and the heavens,' where the word *day* is made to cover the whole six days of creative work mentioned in the fuller account in the first chapter."¹³

Biblicism very decidedly rejects the interpretation which the symbolical theory gives. "Day" as used in the creation account is not vague and indefinite.

Proceeding on the basis of a historical narrative Biblicism sees several possibilities of meaning among which it is difficult to make decision. Kyle sees three answers "which are consistent with a frank acceptance of the Genesis narrative as a record of facts." The *day* of creation may be regarded first, as a day of twenty-four hours; second, as a great period of geologic time; and third, one of "six looks in upon the work of creation in six successive visions, each one observing creation at a successive stage in its progress, but not necessarily limited in any way by our ideas of time as is true of all visions."¹⁴

A factor which may lend itself to the problem is the anarthrous *day* as used in the narrative. It is not *the* first day, *the* second day, etc., but *a* first day, *a* second day, etc., Undoubtedly this turn in the language has significance. Some have thought that it points to days of ordinary length, not consecutive but separ-

ated by indefinite periods of time. These six days are singled out as the days in which God created.

We may not be able to sense what Moses intended us to understand on this problem; the discussion seeks to show, however, a painstaking effort to discover the intended meaning. As the science of hermeneutics grows, we may be able to determine more accurately its true sense.

SUMMARY

True Biblicism seeks to present an intelligent adherence to the letter of the Bible. God's Word being inspired, authentic, and authoritative leads to unquestioning acceptance of its teaching. The interpretation of Biblical language, being a reproductive process, requires constant search for all the facts which affect the meaning of Scripture. Thus the interpretation of the Bible is a science which itself is growing and progressing. It is unscientific to freeze an interpretation of Scripture.

By way of applying these ideas of interpretation to Genesis 1, 2, the problem is heightened by the fact that these chapters constitute a revelation from God, not witnessed by man. On this account the reproductive process is all the more difficult. Interpretation must move forward, ever keeping in mind that the Genesis account, historical narrative par excellence,

is nevertheless cast into the form of "a great religious poem celebrating the glory of God as the Creator of all things." By this kind of Biblicism the scientist may come to see that the Bible understood as its authors intended it to be understood, rather than being an obstacle to faith is faith's greatest challenge.

FOOTNOTES

1. *Bibliotheca Sacra*, Melvin Grove Kyle, Editor-in-chief, (St. Louis, Bibliotheca Sacra Company) Vol. LXXXVI, No. 343, Art., *The Bible in Its Setting*, pp. 306, 307
2. *International Standard Bible Encyclopedia*, (Chicago, Howard Severance Company, 1930) James Orr, General Editor, Vol. III, p. 1489
3. *Ibid.* Vol. I, pp. 644, 644A Art. *Chronology of the Old Testament* by Edward Mack, revised by Melvin Grove Kyle
4. *The Heart of the Old Testament* (New York and London, Harper and Brothers, Publishers, 1922) p. 17
5. *Notes on Genesis* (Grand Rapids, William B. Eerdmans Publishing Company, 1943) pp. 22-25
6. *Bibliotheca Sacra*, op. cit. p. 295
7. *Notes on Genesis*, op. cit. p. 18
8. *Bibliotheca Sacra*, op. cit., pp. 299, 300
9. *Exposition of Genesis* (Grand Rapids, Baker Book House, 1950) Vol. I, p. 42
10. *Scofield Reference Bible* (New York, Oxford University Press, 1917) p. 3
11. *The Westminster Dictionary of the Bible*, Revised and Rewritten by Henry Snyder Gehman (Philadelphia, The Westminster Press, 1944), p. 120
12. *Exposition of Genesis*, op. cit. pp. 70, 71
13. *Bibliotheca Sacra*, op. cit. p. 302, 303
14. *Ibid.* P. 307

The Principle of Growth As An Obsession

WILLIAM J. TINKLE, Ph. D.

Let us imagine a cold night in November. As the temperature falls the surface of the lake begins to change from liquid to solid, the ice becoming thicker as the night becomes colder. Although a test might not reveal a perfect proportion, it may be said that the amount of ice varies indirectly with the temperature. In other words the growth of this is determined definitely and solely by external conditions.

Could we make a similar statement to describe the growth of living things? At first it seems to one that he may say so, if he is careful not to beyond certain optimum conditions. A plant, for instance a bean plant, grows faster with an increase in temperature but it should not be much warmer than 100 degrees F. Temperature, however, is only one factor, for water must be available in the ground, yet not enough to keep oxygen away from the roots. There must be a plentiful supply of nutrient substances such as nitrates, potash, and phosphoric acid, although here again an over supply does not cause added growth. In addition to these growth factors there should be no parasites within the plant nor animal predators upon it.

It is evident that the growth factors affecting the bean plant are more numerous than those which determine the thickness of the layer of ice. But every one recognizes that living things are more complex than inanimate matter. Accordingly it may seem that all growth is regulated simply by surrounding conditions, if we consider that the factors should be in balance; in other words, that the law of the ice governs the bean also. It is characteristic of our age to formulate a law which functions in physics or chemistry, then to say that there can not be any variant rule in any realm. As stated by the Christian Professional Men of Greece in their book, "Toward a Christian Civilization," our age is noted for its negation.*

But before we decide about the regulation of growth, let us return to our bean plant and observe the growing pods. We may think, "The more water and sunshine, the longer grow the pods"; but none of them grows longer than eight inches. Within the pods, seeds are growing, each containing an embryo plant, which may be seen easily by splitting the seed open. As we look at the plant from day to day the pods seem to go into reverse, right in the middle of the optimum growing season. The pod itself loses its green color, the embryo plants cease their growth, and the seeds not only cease growing but even shrink as they give off water to become mature. The control comes from within the bean plant, not from the en-

vironment; for on another branch the pods still are growing.

We can not simplify the problem by saying that seeds cease to grow because they have come to the end of their way. They are not at the end but in the middle of the way. The bean embryo is at a very intermediate stage, having one root, two leaves, a bud, and stored food. It goes into a dormant stage and if the bean reaches the soil the dormancy is broken by moisture and warmth, the embryo resumes growth and becomes a plant.

Another example of the above principle is a horse; which increases in size according to the amount of feed eaten until it is about two years old, then remaining the same size, even if it eats an abundant amount of feed. While living things are influenced by the environment, yet they rise above this influence and control their own metabolism. Inanimate things such as icicles, stalactites, deltas, and snowdrifts have no inner control but grow simply by creation, adding layer to layer whenever the environment supplies new material. Human knowledge tends to accrue in similar fashion. Not that knowledge itself is like lifeless objects but its manner of piling up after being discovered is similar. This is in contrast with living things, for they do not increase beyond their limits even with unlimited time or environment.

The events of the past three hundred years have caused western people to feel that growth is well-nigh universal; a general upward-trending principle which enables each new institution and each new generation to start at the highest point reached by its predecessor and work its way upward from that point. I use the word *feel* advisedly, for this idea that improvement is innate is simply felt. When we stop to think the matter through we are convinced that our examples of improvement are only special cases.

In western Europe and North America, material well being has increased remarkably during the last three hundred years. Our facilities for travel, information, clothing and processed foods are such that our lives are much more rapid and less difficult than those of our ancestors. The change has been brought about by the industrial and agricultural revolutions, which in turn depended upon the discovery of new lands and a wider exploitation of natural resources. These changes have affected our thinking unconsciously, obsessing our minds with the idea of growth.

As stated above, the material progress of western Europe and North America is but a special case. In most parts of the other continents, comprising the greater part of the area of the world, work goes on

* Christian Professional Men of Greece; *Towards a Christian Civilization*, p 27 ff; Athens, Damascus Pub. 1950

at the same pace it has kept since the dawn of history, depending upon the muscles of men and beasts rather than upon steam and electricity. This progressive area is limited not only in space but also in time, for three hundred years is but a small fraction of the time which man has lived upon the earth.

Furthermore, we can not be certain that material progress will increase in the future in view of the problems which it faces. Take, for instance, the problem of labor-saving machinery turning men out of employment. In the past, men so affected have found employment in other industries, which were expanding. These industries could expand because new raw materials were discovered and new markets were opened among people who had few markets of their own. But can we expect industry to expand indefinitely when the area of the earth is a fixed amount? It is like the financial problem of a cemetery which depends upon the sale of lots to pay for its upkeep. When all of the lots are sold it ceases to have an income, and the public has to formulate another plan for its maintenance.

Having discussed the negative ideas that growth is not a universal upward tendency, and that in living things it is limited not solely by lack of favorable environment, let us turn to its positive guidance. In plants, animals, and persons, growth is directed by genes, which are tiny particles in the nucleus of each cell. The method used by these determiners has not yet been worked out in all details, but we know that they cause the secretion of enzymes and hormones and direct the circulation of the latter to the proper part of the organism. It has been proved definitely, however, that when genes are formed for a new generation they do not tend to be larger or more complex than those of the former generation, but tend to maintain a common base level.

Modern research on growth gives no basis for the idea of the nineteenth century evolutionists, that new generations of organisms tend to be larger and more complex than former generations. Indeed this idea seldom is formulated in words but is an assumption

upon which the postulated rise from Amoeba to man is based. It is characteristic of scientific theories that they are based upon assumptions; and if one accepts this first step, the following steps seem logical.

A fair statement of the belief of evolutionists is the following, by Parker and Haswell: "The plant- and animal-worlds have been evolved by a gradual process of development, in the course of which the higher forms have originated from the lower." ** Some statements by other authors emphasize other words, such as *change* or *struggle*, but whether an evolutionist stresses growth or not, he had to assume it when he agreed that our present animals developed from a tiny mass of protoplasm.

It is true that evolutionists recognize some changes which result in loss of structures; but according to their theory the changes which result in gain in structure are the more significant; else they could not postulate a progression from Amoeba to man.

As discussed above, the present author believes that this postulated increase in size and structure has not been observed but is taken by analogy from juvenile stages of plants and animals, and from modern industrial progress. It may not be expressed, nor even thought through; yet strongly felt because of the temper of the times.

SUMMARY

Growth in inanimate matter is but a simple affair, being a resultant of the forces in the environment, which may tear down as well as build up. Growth of human knowledge also is a process of accretion, tending to accumulate an ever larger stock pile. Living organisms, however, comprise a distinct and advanced class. Their guidance and control of growth convince us that they are not accidental assemblages of atoms which happened to be made up of the right proportions of carbon, nitrogen and the rest, but they are autonomous entities. Apart from creative activity they would not be here.

** Parker, T. J. and Haswell, W. A.; *Textbook of Zoology*, Volume II, p. 624; MacMillan, 1921

The Psychological Implications of the New Birth*

NORVELL L. PETERSON, M.D.¹

I blush when I think of the paper I presented, "What's Wrong With the World", two years ago at the New York Convention. This year from the safe distance of New England, I send you one on the individual and leave the world to God. We will endeavor to pursue in this paper a study of the dynamics peculiar to the Christian experience. While these forces involve and influence all areas of our being and personality, it is my intention to deal especially with those of the psyche² and the pneuma³.

It being the purpose of this paper to deal with the psychological implications, the dynamics of the new birth experience—let us first survey the biblical theological background. From the standpoint of pneuma-dynamics⁴, there is no more basic or dramatic verse in all the Bible than Matthew 21:44:

Whosoever shall fall on this stone shall be broken,
but on whomever it shall fall it will grind him to powder.

This verse carries one step forward the dynamic principle of Matthew 16:13-18, where Jesus asks of his followers, "Whom do men say that I the Son of Man am"? And Peter replies, "Thou art the Christ the Son of the living God". Then our Lord answers, "Upon this rock ('The Christ the Son of the living God'), I will build my church and the gates of hell shall not prevail against it."

The importance of Jesus Christ in the evangelical pneuma-dynamic concept is also stressed by the Apostle Paul in Colossians 1:15-20. Here the Apostle climaxes his superb seven superiorities of Christ with the exclamation: "that in all things He might have the preeminence".

The Essential of the New Birth

Since the Holy Scripture thus reveals The Lord Jesus Christ as absolutely essential to the new birth experience (spiritual regeneration), let us look for the psycho-dynamics involved. What are the psychological implications in one's relationship to Jesus Christ that bring about the new birth?

What Jesus Christ is to the sinner, to me, to you, is the heart of this experience! What the Lord Jesus Christ means to the individual in relationship to the spiritual new birth is the crucial difference between myself and some of my dearest friends whom I long

for in the Lord. What Jesus Christ is to the individual is the difference between so called modernism, neo-orthodoxy or liberalism and the evangelical scriptural position, theologically. Dynamically it is the difference between accepting eternal life, accepting The Way, The Truth and The Life⁵; (Jesus as God and Christ as Lord⁶): or denying Him and refusing eternal life. Denial is one of the most pathological mechanisms of the human mind, in this instance, an eternally fatal one.

What the New Birth Experience Is.

Let us first consider that the new birth experience is a vital new relationship between two personalities or beings, the sinner and God. To understand what is involved it is necessary to isolate as much as possible each force and factor present in this relationship. In order to do this it will be necessary for us to understand something about "ego function" and the way in which the mind operates. As used here *ego* is defined as that portion of the personality which is in contact with the environment through the senses, perceives and evaluates the milieu, and directs behavior into acceptable compromises between the blind drives of the id, (the purely physiological and unconscious), and the demands and the idealizations of the *super-ego* (conscience and intellect).^{7,8}

The ego function of the individual is that of administrative action. It is the contracting part of the personality. The contracting representative of the total personality. God's personality is represented by Jesus Christ.^{9,10}

Importance of Sovereign Will

It is essential to accept the complete and absolute sovereignty of the individual to decide his own destiny—his right to hell or his right to contract with God for heaven. Corollary with that is the absolute sovereignty of God to do as He pleases, limited only by His promise not to send to hell anyone who does accept Jesus Christ on His terms. But in divine justice, He must send to hell everyone who does not meet these terms necessary to salvation through Jesus Christ.) This idea, of course, sets up God as the supreme, final and absolute authority. Any relationship which the sinner has to Him is strictly on a basis of God as authority, not on any authoritarian basis. Authority is used here to mean—one who has

*Paper presented at the Eighth Annual Convention of the American Scientific Affiliation, Winona Lake, Indiana, September 1-3, 1953

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²Psyche—the mind; the mental life; including both the conscious and unconscious processes; the human soul; the part of man's personality that relates to man.

³Pneuma—the spirit, the part of man's personality that relates to God.

⁴Pneuma-dynamics—The moving spiritual forces of any kind and the laws relating to them. I believe that pneuma-dynamics may be defined psycho-dynamics which carry eternal values and implications above and beyond those ascribed to just the psyche.

⁵John 14:6.

⁶Colossians 1:17, 27.

⁷Jules H. Masserman, M.D., *Principles of Dynamic Psychiatry*, Philadelphia, W. B. Saunders Company, 1946, p. 247.

⁸Is this what Paul is referring to in his discussion of the two natures under the law in Romans 7:15-25.

⁹I do not mean to infer that the other members of the Godhead correspond to the other strata of personality as given in psycho-analytical theory or Freudian psychiatry.

¹⁰I Timothy 2:5.

the legal rightful power, the right to command or act.

Authority vs. Authoritarianism

This is in contradistinction to authoritarianism, the advocacy of the *principle* of obedience to authority as opposed to individual liberty. Authoritarianism infers a relationship to a principle rather than a person and is consequently vague, variable and ill defined. The precise definition of this nebulous "authority" is as varied as the number of people advocating such a principle. It eliminates completely the principle of free will and the right of the individual. This is a basic premise of communism, socialism and all the allied isms. It robs man of his sovereignty and the right to determine his own destiny. He is denied the right to think or act for himself, the right to be poor, the right to be ignorant, the right to be sick, and the right to go to hell; as well as the right to establish a vital relationship with God, as the Father and the Authority universal.

Making Self God

The Holy Scriptures are replete with examples of those who have thought to set themselves up as their own god.¹¹ The first example is that of Adam and Eve found in Genesis 3. 5-6. Their primary sin was in the spiritual area. Psychologically Satan's temptation was for them as it is for us—on the basis of "Ye shall be as gods. . .". The next example is in the next chapter (Genesis 4. 3-8). God accepted Abel's offering but not Cain's. Cain gave the kind of offering he wanted to give instead of what God had commanded. He did "not do well and sin lay at the door". "... Without shedding of blood is no remission (forgiveness)."¹²

Similarly, Pharaoh in the first chapters of Exodus hardened his own heart and refused to listen to God's messenger. God then hardened his heart for him and he ended his life at the bottom of the Red Sea. The first king of the nation of Israel furnishes a good example of one acting in his own sovereignty. Saul took matters into his own hand and offered sacrifice only to hear God's messenger telling him he had done foolishly and his kingdom was given to another.¹³

Surrender to the Sovereignty of God

The Scriptures tell of many heroes of the faith who surrendered to the sovereign will of God. The eleventh chapter of Hebrews, 'God's Hall of Faith', lists twenty such alone. We shall mention only two who dealt directly with Christ. The first is in the third chapter of John where a ruler of Israel came to see Jesus at night. Regardless of what he may have come for, our Lord brought him face to face with the burning question of all time—Are you born again? He not only demonstrates very clearly that this experience is very necessary to eternal life, but also held Himself up as the one to be believed in—that Nicodemus

"should not perish but have eternal life".¹⁴

In the ninth chapter of Acts we find perhaps the most militant religionist of all times, halted on the Damascus Road by the vision of Jesus and the question, "Why persecutest thou me"? The key to the successfulness of the subsequent ministry of the Apostle Paul is indicated in his first response to the demands of Christ—"Who art thou *Lord*?" He immediately accepted Christ as God and as his own Lord and Saviour.

This remarkable surrender experience of the great Apostle encompasses the surrender reaction which I will now discuss from a purely psychiatric view. It will be easier for us to grasp the mechanisms and implications if we shall think of it in terms of an individual wrestling with the problems of alcohol.¹⁵ This surrender experience of Paul's which is identical to that essential to the new birth is described by a psychiatrist in dealing with the alcoholic problem as an event.¹⁶

Surrender Not Submission

Surrender differs from submission in that submission is a conscious, not unconscious acceptance of reality. Submission is a superficial yielding but the tension still continues. *Surrender is an unconscious act* involving a certain set of circumstances and traits in the unconscious mind. It must be seen in its unconscious ramifications to glimpse its reality. When one sees himself in a situation about which he can do nothing, only then can the act of surrender take place. It is when he no longer fights, when he concedes that he needs help, when he cannot help himself. Spiritually it is when the sinner knows and *feels* he is licked. It occurs when the unconscious defiance¹⁷ and grandiosity¹⁸ cease to function effectively.

The act of surrender is the doorway to the state of surrender, when the individual is wide open to accept reality, at a time when he can learn without conflict or without fighting back. There is a persisting capacity to accept reality in an active sense without *trying* to avoid it, dodge it or deny it. The act and state comprise

The Surrender Reaction.

This surrender reaction is the one condition for the beginning of a genuine growth and maturation.

¹⁴John 3. 4-15.

¹⁵The Alcoholic Anonymous program with its twelve steps is a classical example of the dynamics involved in the initial primary relationships with God and in the subsequent continuous process of spiritual growth and development. We have only to substitute Jesus Christ for a power greater than ourself and sin for alcohol wherever they appear in the program; substitute our own pet besetting sin, and it provides an excellent program for dealing with that specific problem and for growth in the spirit.

¹⁶Harry M. Tiebout, M.D., "The Act of Surrender in the Therapeutic Process", *Quarterly Journal of Studies on Alcohol*, (June 1949), Vol. 10, No. 1.

¹⁷Defiance—that quality which enables the individual to snap his fingers in the face of reality and live on unperturbed; to deny that a fact is so in the non-conscious part of the mind, a shield against the truth. (Tiebout, ref. no. 16)

¹⁸Grandiosity—springs from a persisting of the infantile ego which enables the individual to maintain his childish egocentricity and sense of over importance, feelings of omnipotence, demands for direct gratification of wishes, proneness to interpret frustration a evidence of rejection and lack of love. (Tiebout, 15).

¹¹Romans 1. 28-32

¹²Hebrews 9. 22.

¹³I Samuel 13. 8-14.

One can build upon reality. It frees him from "kicking against the pricks" of the spiritual realities in pneuma-therapy¹⁹, as well as psychotherapy.²⁰ The individual is thus freed from a state of storm and conflict, from a need for psychological or physiological mobilization for flight or fight.

As one is a "new creation in Christ Jesus"²¹ we can see how surrender to Him as Lord and Saviour changes one's attitude from a negative to a positive approach. It is inevitable that there should be a change in the behaviour pattern following this act; if not there is obviously no surrender. It applies to the emotional tone of all thinking. This surrender reaction is essential to a positive relationship to God in particular and to life in general.

This type of relationship with God must be in terms of Jesus Christ²² as God's representative and our mediator.¹⁰ It is impossible for man to do business with God except through God's direct and only representative the Lord Jesus Christ.²² We enter into a contractual relationship with God thru Christ as the negotiating representative and party of the first part. We as sinners are parties of the second part.

Translating Surrender into Leadership

The surrender reaction (composed of the act and state of surrender), provides man with a new reality relationship to God as Father with a spiritual reorientation. This new relationship and orientation makes a man effective in everyday living in the world. It is especially important in the home, in dealing with our children. A father who has surrendered to Jesus Christ has learned the most healthful pattern for father-child relationship, for their growth and development.

As the father becomes a follower of Christ, it becomes safe for his child to identify with him and try to be like his father. As the child grows in maturity the father (and to a lesser extent the mother), the authority and head of the home, gradually helps the child to see God as The Authority in the absolute and Christ as the head of the Church.

Children who grow up in such a home have real security and develop strong ego structures, for they

learn to obey authority, without compromise, because it is right. This fulfills the child's need for limits—limits that are not rigid, but set to meet the need of the child, not the needs of the parents; these are not authoritarian limits but limits representing the authority and responsibility of the father who sets them.

Thus the child comes to understand his proper relation to God in terms of the God delegated authority his father exercises. When the child becomes a parent he recognizes what he means to God the heavenly Father—in terms he easily understands.

SUMMARY

It has been my purpose in this paper to show God as authority in the absolute and Jesus Christ as God's way of making himself known to man.²³

Jesus Christ therefore has the right to command our wills, possess our lives, use our talents. He is sovereign and ruler absolute.

Throwing ourselves upon The Rock, we find security in broken helpless surrender, declaring:

Thou art the Christ the Son of the living God.²⁴

Lord, what wilt thou have me to do?²⁵

This bespeaks a surrendered ego, one that now deals in eternal values. One that is *spiritually* alive.²⁶

This spiritually oriented ego can therefore accept the delegated authority of God in the home structure—the father as the head of the family, as Christ is the head of the church.

The child's relation to authority is developed in terms of the earthly father and transferred, as the child's grasp and understanding permit, to its heavenly Father. Limits are understood, responded to, and the surrender mechanism of the ego is developed so that accepting Jesus Christ as Lord and God, the most ego shattering experience, is made simple, natural, normal and necessary.

My earnest hope is that psychiatry will be utilized by evangelical Christians in heeding the admonition to Timothy:

Study to show thyself approved unto God, a workman that needeth not to be ashamed, rightly dividing the word of truth. . . .²⁷ That the man of God may be perfect, thoroughly furnished unto all good works.²⁸

¹⁹—Pneuma-therapy—therapeutics of the spirit; treatment of the disease states in man's relationship to God.

²⁰Psycho-therapy—mental or psychologic treatment of illness especially functional nervous disorders and maladjustments.

²¹II Corinthians 5. 17.

²²Matthew 22:42

²³John 1. 1-5, 8-18, 29, 34.

²⁴Matthew 16:16

²⁵Acts 9.6

²⁶I Corinthians 15.22

²⁷II Timothy 2.15

²⁸II Timothy 3.17

ANTHROPOLOGY

by

James O. Buswell, III, M.A.

A noticeable advance in anthropology is that which S. L. Washburn, chairman of the department of anthropology at the University of Chicago, has called the "new anthropology."¹

Having passed through its "initial descriptive phase", physical anthropology is now entering its "analytic stage" stimulated by recent advances in evolutionary theory, and by focusing of genetic and other sampling and measurement techniques upon problems of process and cause rather than upon those of description and classification only.

"For many years," Washburn points out, "physical anthropology changed little and was easy to define. Physical anthropologists were those scientists, interested in human evolution and variation, who used measurements as their primary technique. The main training of a physical anthropologist consisted in learning to make a small number of measurements accurately. . . The assumption seems to have been that description (whether morphological or metrical), if accurate enough and in sufficient quantity, could solve problems of process, pattern, and interpretation. . .

"During the last fifty years, although excellent descriptive data were added, techniques improved, and problems clarified and defined, little progress was made in understanding the process and pattern of human evolution. The strategy of physical anthropology yielded diminishing returns, and, finally, application of the traditional method *by experts* gave contradictory results. After more than a century of intensive fact-finding, there is less agreement among informed scientists on the relation of man to other primates than there was in the latter part of the nineteenth century. . . With regard to race, agreement is no greater. . ."²

The transition is more graphically portrayed in a table which analyzes the old and the new physical anthropology under the headings of Purpose, Theory, Technique, and Interpretation.³

The purpose of the old:

- a. Primarily classification.
- b. Problems solved by classification and correlation.
- c. Description of difference enough.

Purpose of the new:

- a. Understanding process.
- b. Classification a minor part, and the *cause* of differences critical.

Theory of the old:

- a. Relatively little and unimportant; facts speak for themselves.

Theory of the new:

- a. Theory is critical, and the development of consistent, experimentally verified hypotheses a major objective.

Technique of the old:

- a. Anthropometry 80 per cent, aided by morphological comparison.

Technique of the new:

- a. Measurement perhaps 20 per cent, supplemented by a wide variety of techniques adapted to the solution of particular problems.

Interpretation of the old:

- a. Speculation.

Interpretation of the new:

- a. The primary objective of the research is to prove which hypotheses are correct; the major task begins where the old left off.

Washburn has injected a caution, however, lest such an itemized table lead one to infer that the change is one with a clear and definite beginning and a sharp abandoning of the old methods. He makes it plain that the differences are "in degree only", maintaining a very real continuity in the over-all trend. But it is a great trend and is taking place swiftly. "Actually," he observes, "the physical anthropology of 1950 will seem much more like that of 1900 than it will like that of 1960."⁴

What implications may we as Christians draw from this advance in physical anthropology? To your reporter, it seems that there is every reason to survey the trend as one in the direction of a much more objective and less prejudiced study of the data at hand. For example, Washburn contrasts the old and new ways of evaluating super-orbital ridges:

"As viewed traditionally, if one was interested in brow ridges, the procedure was to classify the structures and then to draw conclusions on the interrelations of races or fossil men. That is, the classification gave a tool to be used in the analysis of evolution and variation. It was, in this sense, final knowledge. But in a different sense, the classification merely outlined the problems to be investigated. No description of the types of browridges gives understanding of the reasons for any of them. The classifications show what kinds exist, under what circumstances they are found, and so pose a series of problems which need investigation. To traditional physical anthropology, classification was an end, something to be used. To the new physical anthropology, classifications merely pose problems, and methods must be devised to solve them."⁵

This is just an indication of the way in which more and more of the problems of man's variations and prehistory are being handled. Partly responsible is the increased realization that the various divisions of anthropology must cooperate in order to progress. Washburn points out that "one of the main implications of the new point of view is that there is a far more detailed interrelationship between the different parts of anthropology than under the old strategy. A

dynamic analysis of the form of the jaw will illuminate problems of evolution, fossil man, race, growth, constitution, and medical application. . . By its very nature, the investigation of process and behavior has a generality which is lacking in purely descriptive studies."⁶

Similarly, William Howells has observed that "A physical anthropologist, instead of yawning at the preoccupations of archeologists with minutiae which he cannot understand, can only be impressed more and more every year by how necessary to him is the information from archeology which alone can keep him from going completely off the track at certain points in problems dealing with human paleontology, or with early population spreads and movements, which might in turn be important to the understanding of the genetics and evolutionary processes of human populations in general."⁷

This is all indicative of a changed attitude from that of scientific generalizers of 50 and 75 years ago. The cock-sure solution through cropping up in elementary and popular treatments, is seldom in evidence in the scholarly journals and summaries which have seriously come to grips with the problems. Such attitudes of honest and objective inquiry, although truly enough biased by evolutionary preconceptions, give the Christian a real opportunity to contribute to his field with equal authority, Supernaturalistic preconceptions notwithstanding, if he is willing to similarly come to grips with the same bodies of data.

I have pointed out elsewhere specifically the possibility of prosecuting the study of physical, as well as cultural anthropology "without involving oneself needlessly in the evolutionary hypothesis."⁸

It would seem that present trends in physical anthropology should make this easier for the Christian anthropologist, despite the continuing necessity to assess almost all investigation as representing the prevailing evolutionary contrast.

FOOTNOTES

1. Washburn, in Kroeber, *Anthropology Today*, Chi. U. Press, 1953

2. Ibid., pp. 714-715

3. Ibid. p. 716

4. Ibid., p. 715

5. Ibid., p. 717

6. Ibid., p. 726

7. Howells, W. W., *The Study of Anthropology* *American Anthropologist*, Vol. 54, No. 1, 1952, p. 2.

8. "Anthropology and the study of evolution" *Journal of the A.S.A.*, Vol. 6, No. 3, Sept. 1954, p. 8.

ARCHAEOLOGY

by

Allan A. MacRae, Ph. D.

The last seven years have witnessed an unusual series of discoveries in Palestine. In the entire history of Archaeology there have never been more thrilling developments than those which followed the original discovery of the Dead Sea Scrolls.

In the spring of 1947 an Arab shepherd happened upon a cave in the wilderness of Judea, a little west of the north end of the Dead Sea. In this cave he found some ancient clay jars, which contained inscribed scrolls wrapped in linen cloth. He took these scrolls to Jerusalem and tried to sell them. Some were purchased by the Hebrew University, while others came into the hands of the Archbishop of the Syrian Church in Jerusalem.

In February, 1948, a representative of the Syrian Archbishop went to the American School of Oriental Research to ask if its members could identify some old Hebrew scrolls which, the messenger said, had been found uncatalogued in the library of the Syrian Monastery. When the scrolls were examined, it was discovered that one of them contained a practically complete text of the book of Isaiah. Its type of writing suggested that it came from the time of Christ, or even a little before.

This was rather hard to believe, since our earliest dated manuscript of any portion of the Old Testament in Hebrew came from the tenth century A. D., and there was little reason to consider that any of our existing Old Testament manuscripts, aside from one small piece of papyrus, had been written earlier than the ninth century A. D. The possibility that a Biblical manuscript had been found which was almost a thousand years older, was truly exciting.

The other manuscripts in the hands of the messenger from the Syrian Archbishop, although somewhat fragmentary, were also of considerable interest. One was a commentary on Habbakkuk; another was the Manual of Discipline of an ancient Jewish sect. It was not long before the original story that these manuscripts had been found in the monastery library was withdrawn, and it was stated that they had been purchased from some Arabs who had discovered them in a cave in the desert.

The Isaiah Scroll was completely photographed at once. As scholars noted its close similarity to the text of Isaiah which is found in our present Hebrew Bible, some of them were thrilled at this remarkable evidence, carrying back our knowledge of the Hebrew text of Isaiah almost a thousand years, and showing how excellently on the whole our Biblical Hebrew

text has been preserved by the great care of the scribes. Others, however, found it impossible to believe that this manuscript was actually so old. They recalled the words of the original messenger of the archbishop, that these scrolls had been found in the archbishop's library, and insisted that they were not ancient at all, but that they came from the Middle Ages. For a time it looked as if scholarly opinion would veer in this direction. The genuineness of the scrolls and their dating have been discussed by numerous scholars from many lands. Now, however, new facts have come to light which seem definitely to settle the matter.

It was very hard to do much investigating in Palestine immediately after the scrolls became known, since the land was then in the throes of war between the Jews and the Arabs. After the situation had quieted down, and a definite borderline had been established, it became possible to examine the cave from which the Bedouins said that the scrolls had been taken. Here many jars were found, together with hundreds of fragments of manuscripts, some of which demonstrably came from the very manuscripts which the Bedouins had sold. Archeologists, who have examined the jars found in the cave, declare that many of them are of a type which was not produced after 100 B.C. Paleographers have argued strongly for a similar date for most of the scrolls. Some of the linen cloth found in the cave was sent to the Institute for Nuclear Studies of the University of Chicago, which reported in January, 1951, that investigation of its Carbon 14 content indicated that its origin could be dated at 33 A.D. plus or minus two hundred years. This certainly fits with an early date rather than with a medieval date for the scrolls.

The contents of the non-Biblical scrolls found in the cave have been much discussed, and it was suggested that they were related to the so-called Zadokite Fragments, found in Egypt fifty years ago, which told of a sect of Jews living in the desert, which had fled from persecution to Damascus.

Near the cave where the tablets were found, there was an old ruin, known as Khirbet Qumran. This was excavated in 1951 and 1953. It proved to be the headquarters of a group of Jews which began to use it in the second century B.C. Remains of a scriptorium were found, which was evidently the place where the scrolls had been copied. Near it other caves were discovered. One of these, situated in the opposite direction from Cave One, contained pieces of over one hundred scrolls. Many of these pieces have been fitted together, and portions of almost every book of the Old Testament have been identified. Some of the manuscripts contain parts of the Zadokite Fragments, verifying the theory that the group which produced these scrolls is the very one described in the Zadokite writings which were found in Egypt fifty years ago. The non-Biblical writings have many allusions to

contemporary events, expressed, however, in veiled language. Some of them are thought to refer to incidents in connection with the Maccabean revolt of around 168 B.C.

All this naturally stimulated the seven hundred Bedouins who live in the area to hunt through these wild and desolate desert regions for more caves. Soon other manuscripts began to appear for sale in Jerusalem. Many of these came from two caves which had been discovered in a distant wadi two hundred feet up the side of a six hundred foot cliff. These caves were so large that about fifty men could work in them at one time. They have provided us another great collection of manuscript fragments, mainly written in letters of a type used a century or two later than those previously discovered. Among them are many which deal with the Second Jewish Revolt against the Romans (132 to 135 A. D.). They throw much light on the history of that time, and give further evidence of the early date of the other manuscripts.

The study of the manuscripts from the various caves is found to be of great value in giving new understanding of many points of Biblical interpretation, and in fixing the exact text of the Old Testament in many places. In general they agree so well with the established text that they show how very excellently it has on the whole been preserved. The non-Biblical texts are also of great interest, as they reveal the life and views of the sectarian groups of Jews who wrote these manuscripts. They should greatly enlarge our knowledge of this period of Jewish history, should give us a better understanding of the Jewish world at the time of Christ, and should cause great change in many of the theories of the origin of Christianity and of the development of Judaism which are now widely held. There are so many texts and so many problems connected with them that it is too early to draw conclusions much beyond what we have already stated. It is already a most exciting and complicated development in archeological study, and one which should result in bringing many facts of great interest to light, as these scrolls are studied in coming days.

Faith Theological Seminary
Elkins Park
Philadelphia 17, Pa.
November 5, 1954

BIOLOGY

by

Irving W. Knobloch, Ph.D.

The Role of Polyploidy in Evolution

In previous issues we have discussed the roles played by point mutation and chromosome rearrangement in species formation. In this contribution it is proposed to briefly outline some of our knowledge

regarding polyploids. First of all, we might distinguish between aneuploidy and polyploidy. The first term is applied to a condition in which there are not complete additional haploid sets of chromosomes. For example a somatic cell of *Drosophila* should have eight chromosomes. If it has seven or nine or some such odd number, we are dealing with a case of aneuploidy. Polyploidy may be said to exist if an organism has three or more complete haploid sets of chromosomes. If the haploid number of a hypothetical individual were seven, then the normal diploid would show fourteen in each cell. One containing three sets or twenty-one would be a polyploid, in this case a triploid. If one had twenty-eight it would be a tetraploid or if it had thirty-five it would be a pentaploid and so on. These are degrees of polyploidy.

Turning back now to a brief look at aneuploidy, we find that the fruit fly and the Jimson weed have been intensively studied. In the former organism a gain or loss of a chromosome has, in general, a noticeable effect on the phenotype of the fly. For data on the second example we look to the work of Dr. Albert F. Blakeslee. In regard to the investigations on the Jimson weed, Winchester (*Genetics*, Houghton, Mifflin Co. 1951) says that "In the normal diploid the genes are in a balance which produces the normal phenotype, but with an extra chromosome present that balance is upset. According to this concept, a different phenotype would be expected for every different chromosome present in triplicate. This was found to be true. Blakeslee has, in fact, found twelve different phenotypes which deviate from the normal". Because of the unbalanced chromosome numbers, however, aneuploidy is not considered one of the major methods of species formation.

Dr. G. L. Stebbins, who has been quoted before, believes that polyploidy is one of the principal methods employed in species formation, particularly in the higher plants. Some statistics on the prevalence of polyploidy, drawn from various sources, may be illuminating. The phenomenon is rarer among animals than among plants being found in the pulmonate mollusks, rotifers, one crustacean, one moth, a weevil, in *Paramecium*, in the worm *Ascaris*, in the fruit fly and in the Salmonidae. There may be others but in any case the list will not be long.

In the plant kingdom we have *Cladophora*, *Chara* and *Lomentaria* from the algae, *Bacterium tumefaciens* from the bacteria, and a number of mosses. Further study will, no doubt, reveal any others in these lower groups. In the vascular plants we find examples in the potato, coffee, banana, alfalfa, peanut, sweet potato, tobacco, cotton, wheat, oats, sugar cane, plums, apples, pears, loganberries, strawberries, ornamental cherries, *Dahlias*, lilies, tulips, daffodils, hyacinths, sugar beets and others. It should be remembered that some species, including some of the above, have both

diploid and polyploid races. In one, *Bromus inermis*, there is no diploid race but only polyploids. For example there are tetraploids, hexaploids, octoploids and decaploids in this one species. The chromosome numbers are 28, 42, 56, and 70 respectively. Taken as a whole, it is estimated that thirty to thirty-five per cent of the angiosperms are polyploids with the highest percentage in perennial herbs and the lowest in woody plants. An interesting sidelight here is that certain plant families have no polyploid members. These are the Pinaceae, Fagaceae, Asclepiadaceae, Caprifoliaceae and Rubiaceae.

Polyploids are divided into two classes—the auto and the allopolyploids. The former might be illustrated by an autotetraploid AAAA in which there are four similar genes. An allopolyploid such as a allotetraploid could have two sets of genes, one from each parent such as AAA'A'. If the number of chromosomes in the cells of a branch of a tomato plant become doubled, as may happen in callus formation, the branch could be the forerunner of an autopolyploid race. If the chromosomes in a hybrid are doubled, then the resultant plant would be called an allopolyploid.

Because of the double gene effect, it is to be expected that tetraploids would be different in appearance. Some are much larger than the diploids. There is generally a noticeable increase in the size of the guard cells and pollen grains and experienced workers can frequently tell a diploid from a polyploid by looking at the guard cells. It has been found possible to produce polyploids by using the chemical colchicine and some commercial products have resulted such as large snapdragons, tomatoes, buckwheat, maize, wheat, sorghum, petunia, gaillardia and soybeans.

One of the best known polyploids is the primrose, *Primula Kewensis*. This species arose as a hybrid of *P. verticillata* and *P. floribunda*, both having $n=9$ for the chromosome number. The hybrid originally had a $2n$ number of 18 and was sterile but later it was found that the number had been doubled ($2n=36$) and the plant was now fertile.

We will conclude by saying that autopolyploidy "creates" more types than it does species. The types, with their larger number of chromosomes, are, in many cases, able to live in ecological niches not suited to the diploids. Allopolyploidy, which is hybridization coupled with chromosome doubling, does, however, seem to have resulted in the production of plants which are so different from the diploids as to merit the designation of "species". The doubling of the chromosomes is what makes many otherwise sterile hybrids, fertile. The next article will discuss the role of hybridization in species formation and possibly the part played by allopolyploidy will become clearer at that time.

East Lansing, Michigan
October 29, 1954

PHILOSOPHY

by

Robert D. Knudsen, Th.M.

It is without hesitation that I interrupt the series of columns I was planning on faith and culture to give honor to a great figure in Christian scholarship, Dr. Josef Bohatec of Vienna.

I shall never forget the evening I had the privilege of attending the exercises for the 70th anniversary of the Free University of Amsterdam, where Bohatec, long known for his profound and extensive erudition, received another degree, the honorary doctorate in law. In Holland the honorary doctorate is not achieved as easily as here. Though it is not always given as the direct reward for scholarly work, it is really much harder to attain than an "earned" degree. One who is considered for a degree *honoris causa* must be a person of great accomplishments. Knowing what a scholarly reputation belonged to this man, I was deeply moved to hear the expression of deep Christian faith which pervaded and exalted his every statement. This was not the tinny blasting of a calliope but the full-throated peal of a great organ.

Bohatec was born on January 26, 1876. He studied at the university of Vienna, Prague, Halle, Berlin, and Erlanger. His fields of interest were many, for he studied in theology, philosophy, classical and German philology, and jurisprudence. In 1916 he became professor ordinarius at the University of Vienna. He died on June 6, 1954.

Though from the very first Bohatec showed the signs of universal learning, his major field of study was the original sources concerning Calvin's life and work. Here his natural gifts as a historian and his wide knowledge combined to earn him the reputation of being the best informed person on Calvin in our time.

Bohatec's work was pursued with broad sympathetic understanding, with strong methodological rigor, and with minute examination of the original sources. For this reason he was able to throw many well studied subjects into a new light. His scholarly reputation became very widespread with the publication of his *Calvin's Lehre von Staat und Kirche*. Here he showed the defects in the foundations of Troeltsch's *The Social Teachings of the Christian Church*, where Troeltsch deals with the social views of Calvin and the other reformers.

Bohatec was not an original philosopher, though he did publish some works in that field. His approach to philosophy was, however, largely through his own field of history. As an example of his philosophical

work is the massive, *Die Religionsphilosophie Kants in der Religion innerhalb der Grenzen der blossen Vernunft*. With his typical thoroughness he was able here to throw new light on the development of Kant's thought.

In the field of jurisprudence in addition to smaller works he published his well-known, *Calvin und das Recht*, and in 1938 his "Calvin et la procédure civile à Genève," *Revue historique de droit français étranger*. In his juridical work he showed a tremendous grasp of the complicated situation in law in Calvin's time.

Of special interest to Bohatec was the relationship between evangelism and humanism in the development of modern Western thought. In his studies he approached humanism with openness of spirit, but without eliminating or weakening the great antithesis of principles that exist between it and Christianity. One of the results of this study is the volume, *Bude und Calvin*, which Bohatec dedicated to the Free University in appreciation for the honorary doctorate.

The primary question this book seeks to answer is that of the influence on Calvin of the humanism of his day, a question one cannot miss, especially when studying Calvin's early life. This is not a new field of study, but once again Bohatec enriches the knowledge of the reformer. He traces Calvin's idea of an inner connection between the knowledge of God and of the self to influence from Budé, who precisely here sought the essence of Christian philosophy. In this Budé was partly dependent upon others, e.g., Erasmus; but when he says there is an inner connection between divine and human knowledge he is expressing his own position.

I believe that this idea of the analogy between knowledge of God and of the self is one of the most fruitful approaches for the combatting of atheistic humanism. Any light that can be thrown on it either historically or philosophically is most welcome.

That Calvin had intellectual stimulus from humanism and that he in some sense can be called a humanist, does not mean that he did not strike at the root of the paganizing element in it. In summarizing his work Bohatec says the following: "Calvin war Humanist, nicht bloss, weil er bei der Würdigung der freien Wissenschaften und Künste in seiner 'christlichen Philosophie' die Grundgedanken der christlichen Humanisten fortsetzte, berichtigte und ergänzte, sondern auch unmittelbar auf die Antike und ihre Quellen zurückgriff, deren Ideen, Denkmittel und Grundbegriffe (er), soweit es möglich war, namentlich in seiner Ethik und Staatslehre, dem christlichen Gedankengehalt anzugleichen versuchte. Da er den Geist und die Ideen des damaligen Humanismus kannte, konnte er die paganisierenden Bestandteile des letzteren im Licht der unaufgebbaren Werte des 'wiedergeborenen Evangeliums' bekämpfen."

One of Bohatec's latest works was a treatise on Dostoyevsky, *Der Imperialismusgedanke und die Lebensphilosophie Dostojewskis*. This is also a work of philosophic importance, interesting to us in connection with the influence of *Lebensphilosophie* and existentialism. It is also interesting for light it can throw on the opposition of East and West. Dostoyevsky believed in the "mission" of the Russian people, who were more able, he thought, to create a powerful organism of brotherly union of peoples, a living union of love, instead of the rationalistic unions of the West. The East was the religious source; the West was the rational, external civilization. According to Bohatec, Dostoyevsky's ideology is founded in his *Lebensphilosophie*.

Rockmont College
Longmont, Colorado
November 6, 1954

PSYCHOLOGY

by

Philip Marquart, M.D.

May the Christian find benefit in the methods of the world in various intellectual pursuits? Yes, indeed, we cannot all launch out, as Augustine did, into new realms of Christian thinking. If we could not use the work of unbelieving specialists, we would have no textbooks for Christian colleges.

One of the new projective tests in psychology is the Sentence Completion Test. It is not designed to be used for finding spiritual problems, but it seems to do so nonetheless. One is given a portion of a sentence and is asked to supply words enough to complete the sentence, as quickly as possible. Most people tested in this way, realize after a few sentences, that their completions are very revealing of their personality, yet they seem unable to make their completions otherwise.

It became apparent, after testing a number of believing Christians, that the Sentence Completion Test may show individual differences in their spiritual lives. The content of some of their completions show an interest in spiritual things or the lack of it. It was found that patients having many neurotic preoccupations tended to show no spiritual content. There were others who showed the same lack, yet they denied neglecting Bible readings or private devotions, nor were they backslidden in their life. Some of them were merely lacking a moment-by-moment awareness of the presence of Christ.

Here are some of the incomplete sentences which were most apt to bring out spiritual responses.

"I admire . . .

A person's life . . .

The main driving force of my life

My standards are

I always wanted to be

My philosophy of life is

The main thing in my life

My greatest ambition is

My goals"

There are many Christians who take this test who do not show any spiritual or Biblical completions. One very deeply spiritual Christian leader had such spiritual content in 94% of the incomplete sentences. This seems to be a very sensitive test of whether and how much a believer is looking unto Jesus as he should.

Wheaton, Illinois

November 3, 1954

SOCIOLOGY

by

Frank A. Houser, M.A.

This column is ordinarily devoted to comments on developments in sociological theory and research which bear upon religion. And, when rigor of logic and observation characterize either theory or research there is rarely anything inimical to Christianity. However, sociologists must come down out of this rarified atmosphere of precision, and when they attempt to apply their knowledge to problem areas in society, the public is often spectator to hassles between "scientists" and religion which are comparable to anything Durocher displays when he jousts with umpires at the Polo Grounds.

For example, there appears in *Marriage and Family Living* for August 1952, and August 1953 sections on counselling regarding pre-marital sexual behavior. Both articles are recordings of panels—thus involving medical doctors, clinical psychologists, sociologists, marriage counsellors, and other assorted combatants. Both panels feature a first round where one fellow (a physician in one case, and a clinical psychologist in the other) flagellates Christianity or religion for being prudish, authoritarian, or unscientific while his opponent attempts a defense of chastity on social and psychological grounds. Before long the only person not in the donnybrook is the time keeper—a rather straight-laced fellow who has to get home to the wife and kids at a decent hour.

Here then is a running account of the types of argument. Of course, not all are explicitly anti-Christian. Some are in defense of morals closely associated with Christianity.

Panel 1.

A clinical psychologist uses this argument: "... because there are the widest possible individual differ-

ences, it is most questionable whether we should try to make all human beings conform to one dogmatic and invariant code." Fairly close to this relativism is a lady sociologist's counseling philosophy on premarital intercourse: "If they (counselees) ask me what my opinion is, I can only say, 'I'm of another generation; therefore, I can tell you what works for me, but it may not work for you.'"

A rather glib categorization was made by the clinical psychologist who asserted, "While fornication in our society involves some dangers, so, too do skiing, driving a car, falling in love, and doing any number of other things which few of us hesitate to do . . . although I know of many organizations and groups which are determined to suppress premarital sex relations, I know of no group which is now working for the suppression of such dangerous activities as mountain climbing, football, motoring and—yes!—marriage." He also concluded that "Sex is fun" from which I inferred that anybody who opposes such natural exuberance among the unmarried is a downright kill-joy. Several sociologists combined their forces at this point to question the wisdom and accuracy of so dissecting the personality and social relations as to single out "fun" and enthrone it over all the other considerations. The issue of valuing what is "individual", "biological natural", "free", "democratic", and "a right" over against what is responsible, controlled, and considerate threaded through both panels. For example, a teacher of ethics countered the extreme "permissive" approach with the assertion that permissiveness meant the abolition of the family system as we know it, that to have a family system is to have a restrictive sex code. Sociologically oriented readers will recognize the strength of this "functional" argument rather popular in modern sociology.

Members of the audience also had their opportunity. One man took aim at Kinseyan thinking which notes the statistical prevalence of deviation from the conventional code, and therefore concludes we ought to change the code.

Panel 2.

A medical doctor began with a below-the-belt punch when he said, "As I see it, the Christian doctrine of vicarious atonement calls upon us to believe that God chose to make a painful and bloody sacrifice of His only Son to square the sins of sex participation on the part of all the rest of us, a procedure which, looked at rationally, seems cruel and unjust and serves to place sex emotions in the worst light imaginable." Perhaps it is only Christian to say that his training probably did not include rules of exegesis. In any case, his own philosophy came out rather clearly in this observation: "The time is already at hand when numbers of us are giving up on ourselves as fourth-rate sons of the gods, and are beginning to consider our potentialities as first-rate animals, at the top of

the biological scale. This view brings at once a great responsibility and an exciting sense of newly found worth and potential strength." Your columnist confesses his difficulty to comprehend how such change from "sons of the gods" to "first rate animals" brings newly found worth—unless that new worth is less than the old. And, if such be the case, I cannot share the doctor's excitement.

A rather disappointing comment was made by a well known sociologist who thought a rational sex code could be found in "the adjustmental pleasure-pain valences of the individual. They are, moreover, highly individual and should be determined more or less experimentally, for each individual." Aside from being slightly heretical (for sociologists are not wont to place such emphasis on the individual as the ultimate reference) it appears conceptionally sterile to couch behavior in terms of such dichotomous pleasure-pain categories. Surely there have been advances in social psychology since the days of Jeremy Bentham's "felicific calculus".

It is rather apparent, in summary, that practitioners on these panels follow no one set of values. If the panels are representative at all they probably reflect the heterogeneity of commitments in the social science fraternity. However, it is in the field of applied social science much more than in theory or research that religion gets considerable sparring practice with eager opponents.

Wheaton College
Wheaton, Illinois
November 10, 1954

Letters

Editor:

As the author to the anonymous article which appeared in the March issue of your Journal under the heading, "A criticism of the A.S.A. monograph on 'Creation and evolution'", I feel I owe an apology to the readers. I knew that Dr. Mixter wished to publish my comments, but put off revising them so long that he despaired of me and had them published as they stood. That is, as a hastily written epistle, poorly organized. One source of confusion is the omission of the page references in the margins to tie certain parts to corresponding sections of Dr. Mixter's pamphlet. The interested reader can, however, supply most of these.

I must admit to one inadvertent misstatement of fact. The 24 foot bed of graphite I refer to turns out to be mostly a metamorphosed limestone with numerous graphite inclusions. It is, nevertheless, a sedimentary formation, which may be evidence for organic origin. The unequivocal determination of the origin of ancient graphite by the carbon isotope ratio seems to

be impossible, as the distinction between inorganic and organic carbon is not as distinct as once thought.

I feel I must reiterate three points. The first is stated clearly by Dr. Mixter (p. 2, par. 1), "The 'I don't know' of the Creationist is likely to soothe him into a complacency so that he does not search the natural sciences for explanations of 'things as they are'." The second is my opinion that the gaps in the geological record are not so remarkable nor so sharply defined as some would lead us to believe. The third is the matter of the machinist and the machine. This common argument I tried to dispose of, but obviously did not convince Dr. Mixter. To counter his example muscles work on levers (bones) because it is the simplest way they can move a rigid structure. What alternatives are there? Pistons, inclined planes, gears and freely rotating axles are none of them readily adaptable to the mechanics of a body of flesh and bones. The soft bodied animals, too, use levers, but here the mechanism is not so elegantly simple. Dr. Mixter believes God invented the lever; I don't see how life could exist (aside from some simple micro-organisms) otherwise. A predator with legs can move faster than his prey without them. To paraphrase Dr. Mixter: Evolution caps the argument.

All of which is not to say that I do not believe Dr. Mixter's monograph is not useful. He is, in the first place, much more radical and logical than some other advocates of special creation, and so serves to enlighten rather than obscure. On the other hand, he points up the deficiencies in the evolutionist's argument, and may help spur him to more rigid proof. And if he gives comfort to others in doubt, he has performed a service.

In conclusion, I would like to recommend that those interested in what modern scientists have to say about the possible (mechanistic) origin of life read the article by George Wald in the August (1954) issue of *Scientific American*, and the letters to the editor in the October issue. A much more detailed examination of the problem will be found in the April (1954) issue (no. 16) of *New Biology* (published by Penguin Books), where four eminent authors discuss (and disagree on) this knotty problem.

Sincerely yours,

John H. McClendon

48 W. Delaware Ave.
Newark, Delaware

News Notes

The Executive Council of the A.S.A. met in Chicago at the Sherman Hotel Saturday, November 13. Members present were: Russell L. Mixter, Delbert N. Eggenberger, Hendrik Oorthuys, H. Harold Hartzler. The fourth revision of the Constitution was presented and discussed. It was decided to wait for additional comments from members of the Affiliation before submitting a draft to Fellows for ratification. Dr. Howitt will continue to edit this material.

It was decided to send some A.S.A. publications to be displayed at the annual meeting of the Evangelical Theological Society. This meeting is to be held December 27-29 at Shelton College.

The Tenth Annual Convention of the American Scientific Affiliation will be held August 23-26, 1955 at Star Ranch, Young Life Camp, Colorado Springs, Colorado. The program committee for this convention consists of George Fielding, chairman, Robert Knudsen, and Walter Hearn.

John E. Bennett, M.D., graduated from Northwestern Medical School in June, 1954, and is now an intern at Peoples Hospital in Akron, Ohio.

Alvin E. French is spending the current school year at United Theological Seminary, Dayton, Ohio, in further preparation for mission work in Africa.

M. Cordelia Erdman, formerly instructor in geology, Wheaton College, now is Mrs. Dean Barber and resides at 404 College Ave., Moscow, Idaho.