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

Volume 3 September, 1951 Number 3

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Send communications regarding editorial matters to the

Editor: Delbert N. Eggenberger
1121 East 81st Street
Chicago 19, Illinois

Send business matters to the

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

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NEWS OF MEMBERS

DONALD S. ROBERTSON of 2548 N. El Molino, Altadena, California, received the Ph.D. degree from the California Institute of Technology, June 8, 1951. Beginning August 1, he is employed at the Bible Institute of Los Angeles as the head of their newly established Science Department.

ROLAND N. ICKE received the M. D. degree in January, 1951, and completed a year's internship at the Los Angeles County General Hospital in June. He is now on the staff of the Los Alamos Medical Center (Los Alamos, New Mexico).

JON H. ROUCH, M. D. (as of August 15, 1951) had spent seven months in France in language and tropical medicine study before proceeding to French Equatorial Africa to build one of the first mission hospitals in that area.

DR. JOHN T. CHAPPELL of Honolulu reports that his work is being prospered at Jackson College.

CHARLES H. WILLETS resigned his position at Battelle Memorial Institute in Columbus to enter Oregon State College to work towards the Ph.D. degree.

CORRECTION to March news note: Edgar Wesley Matthews, Jr. is a graduate student at Harvard University.

DR. J. LAURENCE KULP now has the rank of Assistant Professor in Geology at Columbia University, New York City.

ALFRED E. HOOVER, serving with the U. S. Army in Hokkaido, Japan, purchased ten copies of MODERN SCIENCE AND CHRISTIAN FAITH for distribution to certain professors, students, a chemist and libraries in Hokkaido.

ADDRESS CHANGES:

Marion D. Barnes, 120 West Grove, El Dorado, Arkansas

George J. Bertsche, Enlisted Faculty Battery, Fort Sill, Oklahoma

Donald R. Carr, 30 East 301 Street, Orangeburgh, New York

Curtis W. De Walt, Jr., 3935 Dawling Avenue, Pittsburgh 21, Pennsylvania

Roland N. Icke, 1336-B 41st, Los Alamos, New Mexico

Paul E. Parker, 915 E. Vermillion Street, Newberg, Oregon

Jon H. Rouch, M. D., The Mid Missions Hospital, Ippy par Barnhari, French Equatorial Africa

James Houston Shrader, 30 Copley Street, Wollaston 70, Massachusetts

John Cameron Sinclair, 5749½ Lomitas Drive, Los Angeles 42, California

William A. Smalley, Mission Evangelique, 329 rue Frere Louis, Saigon, Indo China

George F. Waldo, Sunset Drive, Route 4, Box 63, Corvallis, Oregon

Charles H. Willits, 2914 Orchard Street, Corvallis, Oregon

NEW MEMBERS

ROBERT BAKER, JUNIOR, 1321½ Prairie Street, Elkhart, Indiana. Teacher in Elkhart, Indiana, city schools. B. A. degree, Goshen College, Goshen, Indiana.

EDWARD N. BALDWIN, 329 W. Ridge Avenue, State College, Pennsylvania. George Westinghouse Professor of Production Engineering, The Pennsylvania State College. B. S. M. E. and M. E. degrees from Purdue University.

J. LOWELL BUTLER, Route 2, Box 220, Gresham, Oregon. B. A. degree, Pacific Union College, Angwin, California. Private business.

FRANCES E. CHAPMAN, 1207 Kingston Avenue, Racine, Wisconsin. Development Chemist of S. C. Johnson & Son, Inc. B. S. and M. S. degrees from Lehigh University.

WESLEY MYRON CLAPP, 146 Arch Street, Ramsey, New Jersey. B. S. degree, University of New Hampshire. Pre-medic student.

DAVID S. DAVIS, 64 East 235th Street, New York, New York. Th.B. degree, Shelton College; M. A. degree, New York University. Ph.D. candidate, New York University.

J. E. DOTTERER, 404 Miami Street, North Manchester, Indiana. M. A. degree, University of Illinois. Professor of Mathematics, Manchester College.

ROBERT A. EBERSOLE, 1134 Pine Street, Philadelphia 7, Pennsylvania. B. A. degree Goshen College, Goshen, Indiana. Senior Student, Jefferson Medical College.

J. LESTER ESHLEMAN, M. S., Route 1, Greencastle, Pennsylvania. Medical degree, Hahneman Medical College. Under appointment for missionary service in Tanganyika Territory, British East Africa.

GEORGE E. FALB, Route 2, Orrville, Ohio. B. A. degree, Goshen College, Goshen, Indiana; B. M. E., University of Detroit. Engineer, United Steel Fabricators, Inc., Wooster, Ohio.

RICHARD L. FERN, 602 S. Buena Vista, Albuquerque, New Mexico. B. S., M. S., and Ph.D. degrees from University of Kansas. Assistant Professor, Department of Chemical Engineering, University of New Mexico.

MISS THELMA GIBSON, Care of Mrs. G. H. Talbert, Laurinburgh, North Carolina. B. A. degree, Woman's College, University of North Carolina; M. A. degree, George Peabody College for Teachers. Christian Education Work.

ORIE J. GINGERICH, Box 189, Kalona, Iowa. D. D. S. degree, State University of Iowa.

CURTIS C. GOODSON, Columbia Seminary, Decatur, Georgia. B. E. E. degree, Georgia Institute of Technology. Student at Columbia Theological Seminary, Decatur, Georgia.

ELWOOD C. GRABER, Stryker, Ohio. B. A. degree, Goshen College, Goshen, Indiana.

A. FAY GRASSMYER, Greenwood, Delaware. M. S. degree, Penn State. Teacher and Vice-Principal, Greenwood High School.

HAROLD D. GROH, R. R. 2, Preston, Ontario. B. A. degree, McMaster University, Canada. Principal of High School.

CHARLES HATFIELD, JR., 4612 14th Avenue, S., Minneapolis 7, Minnesota. M. A. degree, University of Kentucky; Ph.D. degree, Cornell University. Assistant Professor of Mathematics, University of Minnesota.

TRUMAN V. HERSHBERGER, Walnut Creek, Ohio. M. Sc. degree, Ohio State University. Research Fellow, The Ohio Agricultural Experiment Station.

ROBERT B. HESS, M. D., Terre Hill, Pennsylvania. Medical degree, Temple University, Philadelphia.

ELDON T. HITCHCOCK, Bob Jones, University, Greenville, South Carolina. B. S. degree, Western Michigan College of Education; M. E. degree, University of Michigan. Teacher of Chemistry, Bob Jones University.

GLENN H. HOFFMAN, Maytown, Pennsylvania. B. A. degree, Goshen College, Goshen, Indiana. Medical student at Jefferson Medical College, Philadelphia.

CHARLES EDWARD HUMMEL, 315 S. Fifth, Geneva, Illinois. B. E. degree, Yale University; S. M. degree, Massachusetts Institute of Technology. Graduate student, Wheaton College, Wheaton, Illinois.

MERLE E. JACOBS, 403 E. Sixth Street, Bloomington, Indiana. B. A. degree, Goshen College, Goshen, Indiana. Student assistant in zoology, Indiana University.

ROBERT EDWIN JERVIS, 477 Milverton Blvd., Toronto 6, Ontario. B. A. and M. A. degrees, Toronto University, Toronto, Canada. Research Assistant and Ph.D. candidate, University of Toronto.

WILLIS M. KAUFMAN, 1419 Briarwood Drive, Durham, North Carolina. B. A. degree, Goshen College, Goshen, Indiana. Graduate student, Duke University.

JOHN R. KENNEL, Route 1, Gap, Pennsylvania. B. A. degree, Goshen College, Goshen, Indiana. High School Teacher.

LEO VIRGIL KLINE, 33 Chittenden Avenue, Columbus, Ohio. B. M. E. degree, University of Akron; M. Sc. degree, Ohio State University. Assistant Instructor and student, Ohio State University.

GAWAIN KOCH, 2018-D Alsace Road, Reading, Pennsylvania. B. A. degree, Goshen College, Goshen, Indiana. Laboratory Assistant, Research laboratory of the Polymer Corporation.

BENO KOPP, 211 Kootensy Avenue, Trail, B. C., Canada. B. E. degree, Sackatchewan University. Junior Development Engineer, The Consolidated Mining and Smelting Company of Canada, Limited.

EDMUND C. KORNFELD, 717 E. 55th Street, Indianapolis, Indiana. B. A. and M. A. degrees, Temple University; M. A. and Ph.D. degrees, Harvard University. Research Chemist, The Lilly Research Laboratories of the Eli Lilly & Company.

CHARLES KREIDER, 163 Stratford Avenue, Wadsworth, Ohio. B. A. degree, Goshen College, Goshen, Indiana. Instructor in High School Sciences, Rittman Public Schools.

ROBERT DONALD McALLISTER, Box 399, Rossland, B. C., Canada. B. S. degree, Washington State College. Engineering Research and Development Division of the Consolidated Mining and Smelting Company of Canada, Limited.

ARTHUR D. MEYER, Creston, Ohio. B. A. degree, Goshen College, Goshen, Indiana. Teacher, Unionville Center High School.

CLYDE E. MILLER, 3308 Richmond Street, Lynchburg, Virginia. M. A. degree, Kent State University. Assistant Professor of Mathematics, Lynchburg College.

DAVID RUSSELL MILLER, Box 648, Brownfield, Texas. M. A. degree, Denver University. Seismic Computer of Seismic Explorations, Inc.

DONALD G. MILLER, 1601 S. Eighth Street, Goshen, Indiana. B. A. degree, Goshen College, Goshen, Indiana. Medical student at Jefferson Medical College.

ARTHUR L. MOSER, Route 4, Goshen, Indiana. B. A. degree, Goshen College, Goshen, Indiana. Test Engineer, Penn Electric Switch Company.

HOWARD M. NASE, 515 Market Street, Perkasie, Pennsylvania. M. Ed. degree, Temple University. Principal, Sellersville-Perkasie High School.

WALTER SCOTT NEFF, M. D., 324 Seventh Street, S., Virginia, Minnesota. B. S. degree, Juniata College; medical degree, Jefferson Medical College. Specialist in internal medicine.

ROGER E. NEUMANN, 4530 N. Hermitage, Chicago 40, Illinois. B. A. degree, Goshen College, Goshen, Indiana. Medical student, Northwestern University.

MRS. LUTHER E. GROVE, JR., Route 3, Greencastle, Pennsylvania. B. A. degree, Goshen College, Goshen, Indiana. High School teacher.

WILLIAM WRIGHT PAUL, 340 W. 55th Street, New York 19, New York. B. A. degree, Temple University; B. D. degree, Faith Theological Seminary; M. A. degree, University of Pennsylvania. Associate Professor of Philosophy and Social Science, Shelton College.

MILLARD M. POSTHUMA, M. D., 2121 College Avenue, Grand Rapids 7, Michigan. Medical degree, University of Michigan. Practicing physician.

RALPH ENGLAND REISLER, Route 1, Notthingham, Pennsylvania. B. S. degree, Wheaton College. Physicist, Ballistic Research Laboratory, U. S. Army Aberdeen Proving Ground, Maryland.

ROBERT L. REIST, Route 1, Box 92, Falfurrias, Texas. B. A. degree, Goshen College, Goshen, Indiana. Farmer.

DAVID FORLONG RICE, 2610 Cook Avenue, Rossland, B. C., Canada. B. A. degree, University of British Columbia, Vancouver. Supervisor of Projects, The Consolidated Mining and Smelting Company of Canada, Limited.

LISLE W. ROOSE, M. D., 301 N. Main Street, Nappanee, Indiana. Medical degree, Northwestern University. Practicing physician.

UURAS SAARNIVAARA, 943 Lincoln Avenue, Hancock, Michigan. M. A. and Th.D. degrees, Helsinki University; Ph.D. degree, University of Chicago. Professor, Suomi College and Theological Seminary.

VERNON H. SCHMIDT, Route 3, Gettysburg, Pennsylvania. B. A. degree, Goshen College, Goshen, Indiana. Assistant Chemist, The C. H. Musselman Company.

MISS ELNORA A. SCHROCK, Niverton Road, Salisbury, Pennsylvania. B. A. degree, Goshen College, Goshen, Indiana. High School Teacher.

ERNEST C. SHANK, Route 3, Box 405, Sarasota, Florida. B. A. degree, Goshen College, Goshen, Indiana. Teacher, Sarasota Junior High School.

JOHN SKORY, 638 77 Street, Brooklyn, New York. B. Sc. degree, University of Alberta; M. S. degree, Iowa State College; Ph.D. degree, Cornell University Biometrician, American Cancer Society.

ARTHUR A. SMUCKER, 1409 W. Park Avenue, Urbana, Illinois. M. S. degree, University of Illinois. Graduate Assistant, University of Illinois.

SILAS JONATHAN SMUCKER, 403 S. Weston Street, Rensselaer, Indiana. M. S. degree, Purdue University. Soil Conservationist, Soil Conservation Service.

WILLIAM A. SNELL, 1900 Dewey Avenue, Rochester 15, New York. B. S. degree, University of Rochester. Chemist, Rochester Gas and Electric.

GEORGE EDWARD SPEAKE, 10773 National Blvd., Los Angeles 64, California. B. S. degree, University of Pennsylvania. Lecturer, Moody Institute of Science.

PAUL MILLER STOLL, Route 5, Goshen, Indiana. B. A. degree, Goshen College, Goshen, Indiana. Public Relations Office, Goshen College.

MRS. MAUDE B. SWARTZENDRUBER, 515 W. 14th LaJunta, Colorado. B. S. degree, Goshen College, Goshen, Indiana. Director, School of Nursing, Mennonite Hospital.

RICHARD J. YODER, M. D., Mennonite Biblical Seminary, 4614 Woodlawn Avenue, Chicago 15, Illinois. Medical degree, Northwestern University. Resident Physician in Obstetrics and Gynecology, Chicago Lying-in Hospital.

S. W. WITMER, 1608 South Eighth Street, Goshen, Indiana. M. A. degree, University of Wisconsin; Ph.D. degree, Indiana University. Professor of Biological Sciences, Goshen College.

PAUL EMMONS YODER, 915 Waverly Drive, Albany, Oregon. B. A. degree, Goshen College, Goshen, Indiana; B. S. degree, Oregon State College. Minister.

ALFRED G. ZOOK, Benson, Arizona. M. A. degree, Arizona State College. Science Instructor.

ASA NEWS AND ANNOUNCEMENTS

The Seventh Annual Convention is to be held at the Wheaton College Science Station located in the Black Hills of South Dakota. The probable date is August 26 - 29, 1952.

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The revised edition of Monograph Two, Creation and Evolution, by Russell L. Mixter is now available. Single copies, 50 cents; in lots of 10 or more, 30 cents each.

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The following back issues of the ASA Journal are now available:

Volume I	Number 1	Volume II	Number 1
	Number 2		Number 2
Volume III	Number 1		Number 3
	Number 2		

The contents of the back issues were listed in the June, 1951, issue. The price is $1 per copy or $3 per volume.

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Several members of the American Scientific Affiliation, living in New England, have expressed interest in forming a New England Section. In order to explore the extent of this interest and to work out promotion plans, a meeting of about six individuals was held during the Annual Convention at Shelton College. J. H. Shrader of 30 Copley Street, Wallaston 70, Massachusetts, called the meeting. Anyone not attending the New York meeting who is interested is urged to contact Mr. Shrader.

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Dr. Marion D. Barnes of 511 E. Fifth, El Dorado, Arkansas, has completed three years as editor of the ASA Journal. His fine services to the ASA have been appreciated.

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The Executive Council is glad to announce that Delbert N. Eggenberger, whose address is 1121 East 81st. Street, Chicago, has accepted the position as editor of the Journal of the ASA. Mr. Eggenberger is employed by Armour and Company and is a member of the American Chemical Society, Sigma Xi (full member), American Association of Physics Teachers, and the Physics Club of Chicago.

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The following is a list of members of the ASA who have been elected as Fellows by the Executive Council. Announcements will be made in the Journal of future elections to the Fellow ranking. Suggestions from the general membership for the election to the Fellow grade will be welcomed by the Executive Council. Please send them to the office of the Secretary.

Frank Allen	John R. Howitt	Paul E. Parker
Roy M. Allen	J. Laurence Kulp	William A. Smalley
Paul Bender	Walter E. Lammerts	Peter W. Stoner
Irving A. Cowperthwaite	Philip B. Marquart	Brian P. Sutherland
Alfred C. Eckert	Joseph S. Maxwell	Hawley O. Taylor
Delbert Eggenberger	Russell L. Mixter	William J. Tinkle
F. Alton Everest	Edwin Y. Monsma	William R. Vis
R. Laird Harris	Hendrick J. Oorthuys	Roger J. Voskuyl
H. Harold Hartzler		

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The following membership data was presented by the secretary at the August Convention.

Denominations represented by ASA Members

ONE EACH: United Church of Canada, Evangelical Congregational, Evangelical Free Church, Advent Christian, United Missionary, Angelican, Missionary Covenant, Apostolic Christian, Quaker. Total 9

TWO EACH: Friends, Seven Day Adventist, Evangelical Lutheran, Congregational Christian, Brethren-in-Christ, Christian and Missionary Alliance, Church of the Nazarene. Total 14

THREE EACH: United Presbyterian, Free Methodist, Lutheran, No Affiliation. . 12

Congregational--4; Christian Reformed--5; Plymouth Brethren--10; Church of the Brethren--8; Methodist--9; Undenominational--28; Presbyterian--29; Baptist--44; Mennonite--48.

GRAND TOTAL 220

Occupations

Industry--31; Graduate student--29; Medical doctors--18; Teachers-secondary--18; Teachers-College, universities, seminaries--95; Miscellaneous--29

GRAND TOTAL 220

Geographical Distribution

Indiana--28; New York--24; Pennsylvania--22; California--20; Illinois--12; New Jersey--11; Michigan--11; Ohio--9; Canada--8; Oregon--8; Massachusetts--6; Minnesota--5; Virginia--4; Delaware--4.

THREE EACH: New Mexico, Africa, Iowa Total 12

TWO EACH: Connecticut, Kansas, D. C., Texas, North Carolina, Georgia, Japan 14

ONE EACH: Arkansas, Idaho, New Hampshire, North Dakota, Wisconsin, Hawaii, Rhode Island, West Virginia, Nebraska, Louisiana, Maryland, Washington, Iran, Alabama, Kentucky, South Carolina, Florida, Tennessee, Indo China, Vermont, Colorado, Missouri, Arizona. Total 23

GRAND TOTAL 220

Number of states listed..... 41

Canada, Africa, Japan, Iran, Indo China, Hawaii. . 6

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Sermons from Science

A letter over the signature of the ASA president, Russell L. Mixter, was sent to members in June, 1951, asking for members who would be available as speakers on science and the Bible and the topics used. This is the beginning of a Speakers Bureau to be sponsored by the ASA.

D. Lee Chesnut, 1185 Highland Park Road, Schenectady, New York
- The Atom Speaks Echoes The Word of God

Wm. J. Schepp, 21-23 Summit Avenue, East Paterson, New Jersey
- Spotted Goats & Black Lambs were Jacob's Wages
- The Golden Calf in the Laboratory
- One Thing Lacking Made the Soup Poisonous (The wild gourd of 2 Kings)
- Polluted Water and Barren Land Cured with Salt
- The Lie Detector (from Numbers 5)
- Limitations of Egyptian Scientists (Imitation of 3 out of 10 plagues)
- Salt vs Leaven
- Israel as the Bigamist Bird in Jer. 17:11 & I Sam. 28:20 (the cow bird)
- Leviathan the Paradoxical Dragon Serpent (Genesis-Job-Revelation)
- The Attempt to Change the Leopard's Spots (British Israelism)
- Man did come from a Fish & His Name was Jonah (why the Ninevites repented)
- The Riddle of Empty Space & The Hole in the North
- From Sun Temples to the Pyramids of the Dead
- The Plough or Bear-- Sign of the Aryan Warriors
- The Sweet Tree to Correct the Bitter Waters
- The Blood of Death in the Feet of Iron and Clay
- The Tree that Made the Iron Swim (how Elisha recovered the lost axe)
- Primeval Mud Instead of the Flood (up from the dung heap with the beetle)
- Celestial & Earthly Calendars, also Scriptural Compass from the Book of Job
- Fission and Fusion in Second Peter
- A Changed & Groaning Creation in This Present Evil World
  (animal scavengers, plagues as alarm clocks, etc. for filthy lazy man) Age
- Cave Men as Fugitives from Justice Throughout History--The Stone Age in Every
- The Rib as the True Birthplace of Adam's Blood for Eve (not a transfusion)
- All Nations of One Blood (the chemist cannot identify negro or white man from the blood)

Henry M. Morris, 622 Stevenson Street, Lafayette, Louisiana
- The Wonders of Water (the science of hydrology in Scripture)
- Science, Scripture, and Salvation
  (exposition and analogies of the laws of deterioration in the physical, biological, and spiritual realms)
- The World That Then Was
  (exposition of the hydrological and meteorological phenomena implied by Scripture to have existed before the Deluge)
- When the Waters Overturned the Earth
  (discussion of the philosophy of uniformitarianism in the light of II Peter 3:3-6)
- The Day God Made the Earth Creation)
  (exposition of the Biblical and scientific evidence for the recency of the
- The Elements Shall Melt turn of Christ)
  (the scientific evidence, in the light of Scripture, for the imminent re-
- Does Modern Science Discredit Biblical Christianity?
  (general discussion of modern science found in Scripture, scientific evidence for God, reality of Biblical miracles, refutation of claimed scientific errors in Scripture, etc.)

Henry R. Beilstern, 6006 Stenton Avenue, Philadelphia 38, Pennsylvania
Blood Chemistry (message which weaves the Blood of Christ into the theme of Blood Chemistry)

W. E. Lammerts, 5305 Linda Vista, La Canada, California
The Genetic Interpretation of the Creation Story
Flood Geology in Relation to the Bible Story of the Flood

M. T Brackbill, Eastern Mennonite College, Harrisonburg, Virginia
The Universe to Scale and Man's Unique Place in It
The Heavens Declare

James O. Buswell III, Shelton College, 340 W. 55th Street, New York 19, New York
Evolution

Donald H. Porter, Department of Mathematics, Indiana University, Bloomington, Indiana
The Fourth Dimension and the Bible

Charles G. Coleman, 5025 Woodland Avenue, Washington 20, D. C.
God is Light (A study of the occurrence of the subject "light" in the scripture as a manifestation of God; and of how the physical properties of light as the laboratory reveals them to us, explain and reveal light's creator, God)
From Darkness to Light (A consideration of the parallel between the six days of Genesis creation and the steps in re-creation of a soul through faith in Christ. It is based on II Cor. 4:6 "For God, who commanded the light to shine out of darkness hath shined in our hearts. . ."

Joseph S. Maxwell, 323 Adams Street, Fairmont, West Virginia
Theophanies
Atomic Glory
Portals of Pearl
Seeing is Believing (or is it?)
Biblical Medical Science
Parables of Science
Breath
Light and Darkness
Shaking
Glory

J. Oliver Buswell, Jr., 340 West 55th Street, New York 19, New York
available as speaker

William J. Tinkle, Woodbine Homestead, Albany, Indiana
Scientists Who Have Faith

Peter W. Stoner, 2440 Glen Canyon Road, Altadena, California
God on the Witness Stand (deals with the first chapter of Genesis and requires a minimum of two sessions)
One Jot or One Tittle (deals with geographical prophecies and their probability of fulfillment. Usually two sessions)
The Christ of Prophecy (deals with Christ's fulfillment of prophecy and the evidence from probability that He had to be the Son of God)
The Power of God (shows the power of God in creation as exhibited in the physical universe)

Roger J. Voskuyl, Westmont College, 55 La Paz Road, Santa Barbara, California
The Christian View of Science
This Atomic Age

Paul E. Parker, George Fox College, Newberg, Oregon
Problems an Evolutionist Must Overcome if his Theory be Correct
Scientific Stepping Stones to Faith

Russell L. Mixter, 1006 North President Street, Wheaton, Illinois

Scientific Method and the Scriptures
(The Bible in Job and other books advocates observation and experiment. Scientists need revelation in addition to the scientific method.)

Creation and Evolution
(An analysis of the various creation viewpoints in relation to present day evidence from classification, distribution, fossils, and heredity of animals)

Walter L. Wilson, P. O. Box 7035, Kansas City 2, Missouri

Messages along scientific subjects referring partly to the inspiration and accuracy of the Scriptures as it touches on subjects in nature. This discussion enters the field of chemistry, physics, geology, botany astronomy, zoology, etc.

Earl H. Tschudy, 932 W. Fourth Street, Hazleton, Pennsylvania

Is the Bible True? Two Poems What Next?
The Virgin Birth of Christ Evolution and The Bible

Maurice A. Yoder, Hesston College, Hesston, Kansas

When I Consider Thy Heavens The Book and the Spade
Our Body the Temple of the Holy Ghost Our Atomic Age
Evidences of the Deluge Story in Stone

Ludlow Corbin, 705 N. Killingsworth Street, Portland 11, Oregon

God is Revealed by Atom or God Speaks through the Atom
The Heavens Declare the Glory of God The Alpha and the Omega
The Rocks Testify for the Bible The Days of Creation

Philip B. Marquart, Wheaton College, Wheaton, Illinois

The Road to Damascus
(an answer to those who would explain away the conversion of Paul by means of psychiatrical and medical considerations)

Basic Anxiety and Adamic Motivation
(an answer to those who claim man was created with anxiety)

Stop Kidding Yourself
(how we cover up and be to ourselves in guile and unconscious delusion as a result of the Fall)

Was Ananias killed by Suggestion
(answer to those who leave out God)

The Least Commandments
(a study in motivation, relating the nine beatitudes to the fruit of the

God's Nuclear Plan of Personality (Spirit.)
(contrasting the Biblical view of man with that of Modern Psychology)

May We use Psychology in Soul Winning?

Changes in Human Nature in Conversion

A Christmas Message from Psalms

The Death of the Son
(a picture of the finished work in Psalm 9)

O Taste and See
(a justification for the scientific method)

A Few Psychiatric Problems Among Christians

The Devolution of Sex--from Adam to Freud

The following two papers are from the transactions of the Victoria Institute. The Victoria Institute is a body with headquarters in London, England, having generally similar aims and objectives to those of the ASA. The Institute has been in existence for some 80 years during each of which an annual volume of transactions has been published. In view of the very limited availability of these transactions in North America we have had in mind the re-publication of some of the most useful papers in book or pamphlet form and the two papers included in this issue fall into this category. Comments regarding them would be welcome from any of our members. From time to time, it is hoped that other Victoria Institute papers will be so brought to your attention and, in due course, published in separate form for wider distribution. It should be pointed out that the copyrights to these Victoria Institute papers rests with the Institute but the Council have kindly given their consent to re-publication by the ASA.

Dr. Brian P. Sutherland of Rossland, British Columbia, is responsible for the selection and editorship of these articles.

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JOSHUA'S LONG DAY (Joshua, Chapter X)

E. Walter Maunder, F. R. A. S.
late Superintendent of the Solar Department
Royal Observatory, Greenwich

The tenth chapter of the Book of Joshua purports to be history, and it is from this history that the sceptic has drawn what he considers to be his most effective weapon against the truth of the Scripture narrative, and the actuality of Scripture miracles. It is therefore worth while to read the chapter with care and attention, and to ascertain what it tells us and what inferences we may naturally and legitimately deduce from it.

This chapter professes to give an account of the conquest of Southern Palestine by the Israelites. We know that there was a time when the Israelites did not possess that country; we know also that there came a time when the country was manifestly under their rule. This tenth chapter of Joshua claims to give us an account of the beginning of the transition from the one condition of affairs to the other.

It is the only such account available to us, and therefore we cannot check it by means of parallel documents. Now men of science, and astronomers in particular, are taught to respect the written document, for without the written document the science of astronomy would be almost impossible. Sun, moon and stars are beyond our reach. We cannot touch them, or alter them in any way. All that we can do is to watch their changes of place and appearance and put those changes on record. And it frequently happens that those records must be accumulated patiently for long generations of men before their full significance can be apprehended. Let me give but one example. Dr. Crommelin, who gave the Annual Address before this Institute on the 9th of May, 1910 (see Transactions of the Victoria Institute, Vol. xlii), computed the movements of Halley's comet for a period of 2500 years and found records of observations at nearly every return: the earliest being in the annals of the Chinese observers 600 years before the Christian era. If the written document cannot be trusted, astronomy at least, whatever might be the case with the other sciences, could never progress.

Now every astronomer knows perfectly well that mistakes are made in the original documents; that where a document is copied, the copy is not always correct; that documents are sometimes purposely altered, or even deliberately falsified; nevertheless, it still holds good that in general the written document has a right to be accepted and in no case is it excusable to alter it, or even to suggest that it should be altered, except upon direct, positive and independent evidence. To alter a record so as to bring it into agreement with some preconceived idea as to what it ought to have contained is, to an astronomer, the unpardonable sin.

But in the case of this particular narrative, we have a testimony beyond that of the written document; a present testimony because it is the geography of the country concerned. It is some 3000 years since the Book of Joshua was written, but the physical features of the country are practically unchanged. The Jordan, the "Descender," still hurls itself downwards through the most marvelous rift in the crust of the earth, and still forms the moat which defends the eastern boundary of the Promised Land. And, west of the Jordan, there still stands the great mountain rampart of the Ridge of Palestine. History and geography are inseparably connected, for indeed geography is statical history, and history, dynamical geography. Thus Belgium has been the cockpit of Europe for two thousand years, not because the Belgians have been quarrelsome beyond all other people, but because their country affords the natural routes for armies moving between France and Germany. In like manner Palestine has been the battlefield between Asia and Africa for four thousand years, and by his victory at Nablous, General Allenby defended both the Suez Canal and the British Raj in India.

The climate also of the country has undergone no radical change. The valley of the Jordan--the Great Rift just alluded to--is still one of the hottest countries of the world. From time to time in the course of his campaign, General Allenby was compelled to send expeditions into the valley, but he always withdrew his troops immediately that he was able to do so; he made no attempt to occupy it permanently.

The tenth chapter of Joshua is an account of the opening of the first campaign of the Israelites into Palestine proper, the land of Canaan, the land that had been especially promised to their forefathers. They had already possessed themselves during the life of Moses of the Country to the east of the Jordan; now it was to be the turn of Canaan itself.

Long after the time of Joshua, the Psalmist sang:--

> "When Israel came out of Egypt,
> The house of Jacob from a people of strange language,
> The sea saw it and fled,
> Jordan was driven back."

The forty years' probation--the wandering in the wilderness--was over. As it began, so it ended. On the tenth day of the first month, the lamb had been chosen for the Paschal Supper in Egypt; now, forty years later, on the tenth day of the first month, Israel had passed over Jordan dryshod, and the lamb was chosen for the first Passover in the Promised Land.

As you all know, the calendar given by Moses to Israel had a double relation. It was based upon the natural month, and regulated by direct observation of the day of the reappearance of the new moon. It was based upon the natural year, and regulated by the direct observation of the ripening of the fruits of the earth. The heavens therefore gave the indication of the beginning of each month; the earth gave the indication as to which month was the first month of the year.

The forty years had gone; they had passed like a watch in the night, and the Psalmist sings of the deliverance which had opened those forty years, and of the deliverance which closed them--sings of them as if both had occurred on the self-same day:--

> "What ailed thee, O thou sea, that thou fleddest?
> Thou Jordan, that thou wast driven back?"

The Israelites had crossed the Red Sea and the Jordan, and they were encamped in the Promised Land. They had crossed the Jordan at its fullest, for "Jordan overfloweth all his banks all the time of harvest" (Josh. iii, 15). "And the people came out of Jordan on the tenth day of the first month and encamped in Gilgal in the east border of Jericho" (Josh. iv, 19).

The first stage of the entrance of Israel on its promised possession was devoted, not to military measures, but to spiritual. For Israel was the Chosen People of God: the nation that knew God; and through all its varied history, all who were best and truest in it recognized continually the presence of God in their midst. On the fourteenth day of the first month, therefore, the people kept the Passover, and during the week that followed they kept the Feast of Unleavened Bread, not with bread made with manna from heaven, which now ceased forever, but with the old corn of the land.

In our inquiry this evening, we are not concerned with the spiritual aspect of the Passover of Joshua, or of the events which followed in the next few weeks. But they are important to us as giving a measure of the flight of time.

The Passover was held on the fourteenth day of the first month of the Mosaic calendar, and the Feast of Unleavened Bread was held on the fifteenth, and six following days; then came the siege of Jericho, which was straitly shut up for a full week or more, and, after its destruction, the purely military operations of the conquest began. These two weeks--the week of Unleavened Bread and the week of the siege of Jericho--bring us to the end of the first month, that is of the month Abib. It is not likely that Joshua would be slack in taking up his own specially appointed duty, that of acting--under the Lord his God--as Captain-General of the Host of Israel. His army was encamped on the plain at the bottom of that great Rift--the valley of the Jordan. For the time being, he was there well supplied with food and fairly secured from attack. But the climate was enervating and he would have no wish for the nation to make that their settled residence. Further, he had an important duty to fulfill: the charge had been laid upon him to proceed into the heart of the land, and to bring the people to a solemn reading of the Law upon the mountains of Ebal and Gerizim. This involved that he had to undertake a military duty: he must force his way up the heights that rose some 3500 feet above him, and win a foothold upon the Great Ridge. We may take it, therefore, that Joshua, after the destruction of Jericho, lost no time in sending out scouts to reconnoitre the road by which he should gain the central plateau.

It must have been, therefore, quite early in the second month that Joshua's scouts returned to him with the report that the fortress which commanded the upper end of the valley of Achor--the ravine which offered the best route for the highlands--was a small town named Ai, and they suggested that quite a small force would be sufficient for its conquest. Obviously this advice would appear to be sound from the military point of view: the ascent up the ravine was very difficult and the Israelites would have a very poor chance of forcing their way upwards in the face of a resolute resistance unless they could surprise the enemy that held the heights. Ai was only a small city, so that a large army seemed unnecessary, and to be much more likely to be detected in its approach. But the result of the expedition was a disheartening defeat. The 3000 men dispatched to seize the pass were detected before they gained the heights, and fell back in confusion and dismay after they had suffered a small loss.

We must not condemn the Israelites as being too fainthearted. What happened was probably this: they were climbing up as quickly as they could in companies or half-companies ("hundreds" or "fifties") and the first "fifty" or half-company was assailed by stones slung or boulders rolled down upon them from above, and was practically wiped out in a moment. The Israelites could see that each succeeding fifty must share the same fate without being able to retaliate. Now, Orientals in such an extremity are very apt to give up the contest, and the Israelites at Ai followed the ordinary rule.

To Joshua this meant far more than a military defeat: it meant that the Lord had shown that He was wroth with Israel, and had withdrawn His help and guidance from the nation. In deep distress, Joshua prostrated himself before the Lord, Who revealed to him that a trespass had been committed in Israel against His express command respecting the spoil of Jericho. The criminal was detected, tried and executed, and when the people had been purged from the trespass, another attack was planned against Ai. On this occasion quite different tactics were adopted. A pretended attack was prepared, in which the greater part of the whole available force was employed; but first a large army was dispatched by a circuitous route to take up a position on the further side of Ai, or, as the narrative expressly tells us, "to lie in ambush between Bethel and Ai on the west side of Ai." Later Joshua himself, with the elders of Israel and the main army, approached Ai from the north. From this point, however, they could not easily approach the city, for there was a valley between them and Ai. Joshua now sent a second expedition of about 5000 men to establish a connection with his first detachment, and when this operation had been successfully carried out, Joshua led the main army under cover of night into the middle of the ravine on the north side of Ai.

With the return of daylight the King of Ai perceived that an attack was threatened, and at once he offered battle. Joshua, on his part, ordered his men to retreat hurriedly in the direction of the wilderness. The men of Ai, believing that the Israelites were again panic-stricken and that the victory was already gained, pursued the Israelites eagerly, and the whole population, not of Ai alone, but also of Bethel, a town distant from Ai some 1½ miles, took part in the pursuit. Then Joshua stretched out the spear which he had in his hand. The 5000 connecting troops passed on the intelligence and the Israelites in ambush rushed upon the empty city and set it on fire. The main army of the Israelites turned on their pursuers, caught them in the open and overwhelmed them, while the ambushes, emerging from the burning town, took them in the rear. Joshua's enveloping tactics were completely successful, even as Allenby's were in the late war.

And now the military operations were again suspended for a time. The nation had to be solemnly dedicated to God, and to take the oath of fidelity to the Law upon the mountains of Ebal and Gerizim. The march thither must have occupied several days, and the date on which that supreme dedication was to take place was without doubt the anniversary of the giving of the Law on Mount Sinai, that is to say, was the Day of Pentecost, seven weeks from the morrow after the Sabbath of the week of Unleavened Bread.

This solemn ceremony ended, the nation of Israel returned to the camp of Gilgal, their way thither being opened, because Ai, the fortress which had commanded the pass, had been taken and destroyed. But when they had returned to their headquarters, an unexpected event took place; a number of strangers, purporting to be ambassadors from a very distant country, presented themselves and besought a treaty of peace.

During the interval between the destruction of Ai and the return of Joshua to his headquarters at Gilgal, there had been important political movements amongst the inhabitants of the land. A great terror, due no doubt to the direct interposition of God, had seized the Amorites, and the other tribes in the country, and had kept them quiet during the religious ceremonies of the Passover and the journey to and from Ebal and Gerizim. But now the Amorites felt that their time was at hand.

> "And it came to pass, when all the kings which were beyond Jordan, in the hill country, and in the lowland, and on all the shore of the great sea in front of Lebanon, the Hittite, and the Amorite, the Canaanite, the Perizzite, the Hivite and the Jebusite heard thereof; that they gathered themselves together, to fight with Joshua and with Israel, with one accord.
>
> "But when the inhabitants of Gibeon heard what Joshua had done unto Jericho and to Ai, they also did work wilily, and went and made as if they had been ambassadors, and took old sacks upon their asses, and wineskins, old and rent and bound up; and old shoes and clouted upon their feet, and old garments upon them; and all the bread of their provision was dry and was become mouldy. And they went to Joshua at the camp at Gilgal, and said unto him, and to the men of Israel, We are come from a far country: now therefore make ye a covenant with us. And the men of Israel said unto the Hivites, Peradventure ye dwell among us; and how shall we make covenant with you."
>
> (Chapter ix, 1-7, R. V.)

You will note that the inhabitants of Gibeon are called Hivites in the seventh verse, whereas just before they have been called "inhabitants of Gibeon." Yet, as we read in the first verse, the Hivites were at first members of the great confederacy of the native tribes; they are included amongst the nations that had gathered themselves together to fight "with Joshua and with Israel with one accord."

What had made the change? I think we may find the answer in the fact that one of the smaller cities of the Hivite republic--Beeroth--was only four miles from Ai, and beyond a doubt the inhabitants of Beeroth had seen the smoke of Ai ascending up to heaven when Ai was burned. That was a kind of argument which even the most stupid of races can understand, and the conduct of the Gibeonites showed that they were not stupid. "They did work wilily and went and made as if they had been ambassadors."

The fraud succeeded: the Israelites knew well that they were forbidden to make any treaty with the inhabitants of the land of Canaan; that they had been all devoted by the word of God to utter destruction. So when--"at the end of three days after they had made a league with them, that they heard that they were their neighbours, and that they dwelt among them; and the children of Israel journeyed, and came unto their cities on the third day"--it is not remarkable that we read in the next verse, "all the congregation murmured against the princes." But the covenant had been made, and though the Gibeonites were made bondmen, yet their lives were saved.

The effect of this treaty was instantaneous. Let it be remembered that Gibeon and Jerusalem, the two chief cities of the Hivites and the Amorites respectively, exist at this present day, and are only six miles apart; that is to say, just about the distance between the Victoria Institute and Greenwich Observatory. It could not have taken long for the news of the treaty to reach Jerusalem, and its significance was understood there at once. Joshua and the Israelites, having secured the Hivites as their allies, had not merely got a foothold in the highlands, but the command of the whole breadth of the Ridge; the Amorites of southern Palestine were completely cut off from their allies in the north. Adonizedek, King of Jerusalem and head of the Amorite confederacy, saw at once that only one chance remained to him; namely, to "rush" Gibeon before Joshua could occupy it with his troops. He sent, therefore, to those of his allies who were closest at hand to beg for their immediate help; namely, to the kings of Hebron, Jarmuth, Lachish and Eglon, that is, the kings of the southern part of the Ridge.

> So they "gathered themselves together and went up, they and all their hosts, and encamped before Gibeon and made war against it. And the men of Gibeon sent unto Joshua, to the camp to Gilgal, saying, Slack not thy hand from thy servants; come up to us quickly, and save us, and help us; for all the kings of Amorites which dwell in the mountains are gathered together against us."

Joshua responded instantly to the appeal. He and his men set out at nightfall; they went up from Gilgal all the night and were at the gate of Gibeon the following day:--

> "And the Lord discomfited them before Israel, and slew them with a great slaughter at Gibeon, and chased them along the way that goeth up to Beth-horon, and smote them to Azekah and unto Makkedah. And it came to pass, as they fled from before Israel and were in the going down to Beth-horon, that the Lord cast down great stones upon them unto Azekah, and they died; they were more which died with hailstones than they whom the children of Israel slew with the sword."

The victory was gained at Gibeon; what followed was the " discomfiture" of the Amorites--that is to say, their dispersal in headlong rout; they ceased to be an ordered army.

This brings us to a very significant feature of the geographical problem. The Amorites fled by the way of the two Beth-horons. A glance at the map shows what this implies. We should have expected the Amorites, upon their defeat, to have retreated upon Jerusalem, which was their base; or if this line were closed, to have attempted to move north and seek shelter with the Canaanites in the country afterwards given to Ephraim. Instead, they fled by a difficult and precipitous

route which led them away from either, and the language used about their flight is most expressive; they were "chased" along the way going up to Beth-horon the Upper; then "they fled from before Israel" in the precipitous descent to Beth-horon the Lower, and while in the going down a tremendous hailstorm burst upon them--a storm so violent that "they were more who died from the hailstones than they whom the children of Israel slew with the sword." The flight of the Amorites was continued yet further; first to Azekah, at which point the hailstorm appears to have ceased. Here the remnant of the Amorites seem to have turned to the south-west, as if they were hoping to reach Lachish and Eglon, the cities whence many of them had come. On their way hither they reached Makkedah, where the battle ended, for sunset fell while the Israelites were there. Joshua's troop rushed the city and destroyed it, and Joshua had the five kings of the Amorites, who had been captured a little earlier, hanged upon a tree in the neighbourhood. At the going down of the sun, Joshua commanded that the corpses should be taken down from the tree and buried in a cave.

All these events--the night march of the Israelites from Gilgal, the climb up the mountains, 3400 feet in height, and the march across the Ridge to Gibeon, the battle at Gibeon, the pursuit of the Amorites from Gibeon through the Beth-horons to Azekah and to Makkedah, not far short of 30 miles in length, the storming of Makkedah, the execution and burial of the kings--all took place between one sunset and next, a period of twenty-four hours.

Where was Joshua standing, and what was the hour of the day in that great moment when he said in the sight of Israel:

> "Sun, stand thou still upon Gibeon;
> ?And thou, Moon, in the valley of Aijalon"?

The expression attributed in the text to Joshua is a striking one. The sun is associated with Gibeon, the moon with the valley of Aijalon; two places on the earth are thus severally connected with the two great lights of heaven. What could there have been in the surrounding circumstances to lead Joshua to associate the sun at that particular moment with Gibeon and the moon with the valley of Aijalon? Why did he so pair them off together?

Usually we see the sun and moon as placed above us in the heavens too high for us to connect them in our thought with any fixed object on our earth. But if they are quite low down in the sky--that is to say if either of them has just risen or is just about to set so that they are almost hidden behind some earthly object--such as a hilltop, a grove of trees, or some tower--then we cannot fail to associate them with the terrestrial object to which they appear to be so close. If Joshua, looking toward Gibeon, saw the setting sun about to sink behind its battlements, then it would be natural, all but inevitable, for him to speak of the sun as being "upon Gibeon." Similarly if the moon was sailing just above some dip in the distant horizon which he knew indicated the valley of Aijalon, it would be equally natural for him to think and speak of the moon as being "in the valley of Aijalon."

Now, to an astronomer, the interest of this fact lies here. Such a sentence as that ascribed to Joshua contains two simple astronomical observations: it is, in technical astronomical language, a record of the altitude and azimuth of the sun and moon at the moment of utterance. To make the observations complete, we need two further facts to be supplied to us:--"Where was Joshua standing at the moment?" and "What was the time?"

We are assuming then, for the moment that the sun and moon were both low down in the sky; the sun had either just risen or was just about to set--that is, it was either early in the morning or late in the evening. But the moon also had either just risen or was just about to set. But they can never be seen together when both are rising or both setting, for in that case the illuminated portion of the moon is only the thinnest possible thread of light, and is completely drowned by the intense brilliance of the sun close at hand. It follows, therefore, that if the sun was rising, the moon must have been setting, or if the sun was setting the moon must have been rising; in astronomical phraseology, the two lights must be nearly in opposition to each other, and the moon must have been almost full.

The view most frequently taken by commentators is that the sun was near its setting, and that Joshua wished the day to be prolonged. But in that case, Gibeon and the sun must have appeared to him as on his western horizon; but as the valley of Aijalon is further to the west than is Gibeon, the moon must likewise have been setting, in which case, as we have already seen, it must have been invisible.

We must therefore try the other alternative--that the sun must have just risen and Joshua must have had Gibeon on his east horizon. If he was between Gibeon and the valley of Aijalon, the moon would have been setting over Aijalon. The relative positions of the two places have not changed during the ages, and to Joshua, placed between the two, the sun must have been roughly 17° south of the east point of the horizon, and the moon, nearly at the full, 17° north of the west point. But this would imply that the time of the year was between the end of October of our present calendar and the middle of February. But the month of February was already long past, since the Israelites had kept both Passover and Pentecost. October cannot have come, for since Beeroth, Gibeon and Jerusalem are so close together, it is certain that the events between the return of the Israelites to Gilgal and the battle of Beth-horon cannot have been spread over several months, but must have occupied at most only a few weeks. It is therefore impossible that Joshua, when he spoke, saw the sun rising over Gibeon, or the moon setting over Aijalon.

Have we therefore proved that the narrative is in error? No. We have simply stopped short in reading it. If instead of ending our quotation with the twelfth verse of the chapter, we had gone on to the thirteenth, we shojld have found that the position of the sun was stated in definite astronomical language: "So the sun ceased in the midst of heaven" (A. V. "stood still"). "The midst of heaven" signifies the halving, the bi-section of the heavens, and means that the sun was on the meridian. It was noon. The two positions of the sun and moon that we have already tested and rejected are the only two in which the two "great lights" can appear in England as being closely connected with terrestrial objects. But there is a position which the sun can occupy in tropical countries--not in England--in which it is in the fullest and most literal sense "in the midst of heaven." That is, when it is right overhead, in the zenith, when a man's foot will cover his entire shadow. This could not take place exactly in Palestine, but at Gibeon, within six weeks of midsummer, the sun at noon will never be more than 14° from the zenith, and anyone on whom its rays were beating down could only describe it as "overhead" and as "upon" the place where he himself stood. Therefore, when Joshua spoke, he was at Gibeon; it was summer time, and high noon.

Knowing this, we can make important use of the information given us about the moon. With Joshua at Gibeon and the time of day, noon, and the moon low down over the valley of Aijalon, i.e., some 17° north of west, the moon must have been almost exactly in her "third quarter," i.e., "half full," and the date must have been the twenty-first day of the fourth month of the year in the Jewish reckoning. But the moon cannot be so far as 17° north of west in the latitude of Gibeon (31° 51' N.) on the twenty-first day of the month earlier than the fourth month in the Jewish year, or later than the seventh month. Now the twenty-first day of the fourth month is some six and a half weeks after the Day of Pentecost, when the reading of the Law took place, while the twenty-first day of the fifth month would be eleven weeks after. Remembering how close Gilgal, Gibeon and Jerusalem were to each other, and how vital to all the three parties concerned--to Gibeonite Amorite and Israelite--was the need for promptitude, it can scarcely be disputed, that eleven weeks is an inadmissible length of time to interpose between the reading of the Law and the battle, and that seven weeks is the utmost than can be allowed.

Adopting, then, the place of the occurrence as Gibeon, noon as the hour of the day, and the date as about the twenty-first day of the fourth month of the Jewish calendar--corresponding <u>that year</u> to July 22nd of our present calendar with an uncertainty of one or two days on either side--the sun's declination would be approximately 21° north, and at noonday it would be within 11° of the zenith. The sun would have risen almost exactly at 5 a.m., and would set almost exactly at 7 p.m., the day being 14 hours long. The moon would have been in about her third quarter, and in north latitude about 5°, it would have risen about 11 o'clock the previous night and have lighted the Israelites during the most difficult part of their night march; it was now at an altitude of 7°, and within half an hour of setting. The conditions are not sufficient to fix the year, since from the nature of the luni-solar cycle there will always be one or two years in each cycle of nineteen years that will satisfy the conditions of the case. The date of the Hebrew invasion of Palestine is not known with sufficient certainty to limit the inquiry to any particular cycle.

At the moment when Joshua spoke, it was, therefore, midday in the fullest heat of summer, and Joshua was at the gates of Gibeon on the summit of the Ridge of the highland of Palestine. The country was then, and is now, one of the hottest countries of the world at that season. The Israelites had already been seventeen hours on the march and in the battle, and had been engaged in severe fighting. The Amorites had no doubt been taken by surprise, and so at a disadvantage, but at least they had been in action only for seven hours, not for seventeen, and therefore should have been much less exhausted than the Israelites. What could Joshua have meant when he issued his command to the sun and moon "to stand still," or, to translate his word literally, "to be silent," "to be dumb?"

No man who has ever experienced the intensity of sub-tropical heat can have any doubt as to the true answer. The very last thing that Joshua could have wished for was that the sun that was scorching his already exhausted troops should be fixed overhead in the zenith and continue to pour down its pitiless rays directly on their heads for many hours still to come. There were seven hours of the afternoon yet before him; the day was far from drawing to a close. If he commanded the sun "to be silent" in what was that silence to consist" In refraining from moving, or in refraining from oppressing?

The answer is given unmistakably by the narrative itself. The sun refrained from oppressing. For the Lord sent a mighty hailstorm, evidently coming, as summer hailstorms always come in Palestine, from the Mediterranean Sea. The dense storm clouds sweep across the low country of the coast and are forced upward as they meet the slopes of the Ridge. As they ascend the air becomes more rarified and the temperature falls rapidly. Thus the moisture with which they are laden is not only condensed but frozen, and hailstorms of a violence approaching that described in the narrative are not unknown. The dazzling glare and fierce heat were replaced by a grateful shade and a bracing coolness.

How was it that the hailstorm does not seem to have injured the Israelites?

It seems to me that we may make a plausible conjecture from noting the strategy which Joshua is recorded to have adopted in his second attack upon Ai. His problem now was similar but on a larger scale. The most obvious line of march for him to take was up the valley of Achor, past the ruins of Ai, and so to the little city of Beeroth, now become his ally, and thence to move southward to the relief of Gibeon. But an advance by that route would have left to the Amorites, if defeated, an easy line of retreat to their base at Jerusalem. Could he again adopt enveloping tactics? We are not told whether he did or not, but I would suggest that he may have sent a considerable detachment to Beeroth under his lieutenant, with orders to draw on the enemy as far from Gibeon as he could, until Joshua should signal to him that the main army was successfully established upon the Ridge between Jerusalem and Gibeon. As in the battle of Ai, the important point was that neither of the Israelite forces should be taken at a disadvantage while forcing their way up the ravines, and before they could emerge from them and deploy upon the tableland. He was operating in the very region where somewhat later the eleven tribes suffered most terrible losses at the hands of the Benjamites in the first inter-tribal war, the forces holding the higher ground being able to overwhelm their opponents with impunity.

If this was Joshua's plan of campaign, his strategy was completely successful, up to a certain point. Probably the Amorites expected him to move upon Gibeon by way of Beeroth, and moved out to threaten Beeroth early in the day, leaving of course a contingent to mask Gibeon. Directly Joshua learned from his lieutenant that the Amorites were in strong force before Beeroth, he would order his main army to move upon Gibeon, and, as the narrative tells us, he destroyed the Amorite troops, who no doubt were left there to continue the siege. These, when attacked, would send hasty messages to the five kings who were with the main body before Beeroth, to tell them that the real attack was being made at Gibeon, and that their forces there were being destroyed. At this news the Amorite kings were seized with a panic, as the Lord had promised to Joshua should be the case. "Fear them not: for I have delivered them into thine hand; there shall not a man of them stand before thee." The Israelite army from Beeroth cut off any retreat to the north; Joshua at Gibeon barred the way to the south and west; one narrow and difficult road alone remained--the road through the two Beth-horons, and along this road they rushed in headlong flight. Then it was that Joshua, seeing that his men were exhausted by their long efforts and by the heat of the day, and that the Amorites had a start of some miles along the Beth-horon road, issued his commands to the heavenly bodies:--

> "Sun, cease thou (i.e., <u>from shining</u>) over Gibeon,
> And thou, Moon, in the valley of Aijalon.
> "And the sun ceased (<u>from shining</u>), and the moon desisted, until the nation had avenged themselves on their enemies. Is not this written in the book of Jasher? So the sun ceased in the midst of heaven, and hasted not to go down about a whole day."

The explanation of this last statement is found in verse 10, in which it is stated that the Lord "chased the Amorites by the way that goeth up to Beth-horon and smote them to Azekah and unto Makkedah." The Israelites had of course no timekeepers, no clocks or watches, and the only mode of measuring time available to them was the number of miles they marched. Now from Gibeon to Makkedah by the route indicated is some thirty miles, a full day's march for an army. It is possible that at the end of the campaign, the Israelites, on their return, found the march from Makkedah to Gibeon heavy work for an entire day. Measured by the only means available to them, that afternoon had seemed to be double the ordinary length. "The sun had hasted not to go down about a whole day."

Was this a miracle? It was certainly a wonderful feat of human strength and endurance. But the Israelites must have been mightily refreshed by the sudden veiling of the sun's glare and the assuaging of his heat; still more by their Captain's word of confident command and the manifold signs of the Divine presence with them. Men can do great things when they know that God is indeed helping them.

This great occurrence appears to be referred to in one other passage in Scripture--the Prayer of Habakkuk. Here again the rendering of the English version is unfortunate, and the passage should stand:--

> "The sun and moon ceased <u>to shine</u> in their habitation:
> At the light of Thine arrows they vanished,
> And at the shining of Thy glittering spear.
> Thou didst march through the land in indignation,
> Thou didst thresh the nations in anger."
> (Hab. iii, 11-12)

There is one passage in the chapter to which I have made no reference as yet. It is verse 14:

> "And there was no day like that before it or after it, that the Lord hearkened unto the voice of a man: for the Lord fought for Israel."

What does that mean? When you go home, take your concordances and look out the words "hearken," "hearkened," "hearkening," and the like, and you will find in the majority of cases that they mean "obey." "To hearken unto the voice of a man" is to obey that man's command.

That is what is meant. Joshua did not <u>pray</u> to God that God would order the sun and moon to obey him. He was there as God's lieutenant-general, and he himself issued orders to the sun and moon, and the Creator of sun and moon, Who guides them in their paths in the heavens, by Whom alone they shine, and by Whom alone they are darkened, obeyed the voice of a man and "fought for Israel."

There was no day like it before. Nor was there any day like it after it, until there came another Joshua, Who did not call a storm from the sea, but Who commanded the storm and it became a great calm. And His disciples said:--

> "What manner of Man is this, that even the winds and the sea obey Him?"

Discussion

Rev. J. J. B. COLES, after remarking how glad they always were to see Mr. Maunder's name on the list of Lecturers, pointed out that the view he had put before them as to the restricted and local range of the miracle of Joshua's Long Day was shared by many Christian students, including the late Canon A. R. Faussett.

Bearing in mind the inconceivable vastness of the solar system and still more of the stellar universe, with its light years as measuring units, the explanation of a local range of the miracle of Joshua X is perhaps more generally acceptable, but on the other hand, the going back of the sun on the sundial of Ahaz (Isa. xxxviii, 8), and the words in Hab. iii, 111, "the sun and the moon stood still in their habitation," and the allusion to "the wonder that was wrought in the land," in 2 Chron. xxxii, 31, and also the Lord's words as to the signs in the heavens which will coincide with His action as the true Joshua in the future crisis of Israel and the nations, seem to support the view held by many others, that a stupendous miracle was wrought, and more in accordance with the actual words of Holy Scripture than the explanation suggested by the Lecturer.

Mr. SIDNEY COLLETT said he was sure that those who attended these meetings were always interested at anything which fell from Mr. Maunder's lips, especially on the subject of astronomy.

On this occasion, however, he was quite unable to follow the Lecturer in his conclusion that what the narrative taught was, not that the day was lengthened in response to Joshua's prayer, but that the sun's heat was tempered by the intervening clouds of a hailstorm.

Now this theory--for I admit it is only a theory--seems to me impossible for the following reasons:--

(1) If this incident had simply consisted in the Lord sending a storm in answer to Joshua's prayer, it would not be true to say "There was no day like that before it or after it" (verse 14); for a similar thing did happen in answer to Elijah's prayer, when "the Heaven became black with clouds and wind, and there was a great rain" (1 Kings xviii, 45), and in James v, 16-18, we are enjoined to expect similar answers to our prayers. Indeed, many of us can testify to the fact that God has often heard and answered believing prayer in regard to the weather.

(2) But the principal fact that makes Mr. Maunder's theory impossible is that the great stones from heaven which the Lord cast upon the Amorites (Josh. x, 11), and which Mr. Maunder interprets as "a great hailstorm with thick clouds," took place <u>before Joshua called upon the sun or moon to stand still, or be silent</u> (Josh. x, 12), and therefore could not possibly have any direct connection whatever with Joshua's prayer to the sun except that, according to the Scripture record, the Lord helped Joshua first by casting great stones from heaven upon the Amorites; and "then" afterwards (as an entirely separate and subsequent Divine intervention) made the sun and moon stand still (or be silent) in answer to Joshua's prayer.

(3) However, as the late Dr. A. T. Pierson once said, when various interpretations are put upon a difficult passage of Scripture, the simplest and most obvious is generally the correct one. So here, when we read that the sun stood still (or "was silent") in the midst of heaven, and hasted not to go down about a whole day (verse 13), we are, I submit, driven to the conclusion that the words mean that, in spite of astronomical difficulties (which are not difficulties to the Almighty Creator), that day was in fact lengthened (see also Hab. iii, 11), making the statement in verse 14 literally true that "There was no day like that before or after it."

It is also a well-known fact that the three great record-keeping countries of the world are Greece, Egypt and China, and these, with India, have all an ancient record of a long day.

The Chinese record, which is the most remarkable, occurs in the essays of the famous Chinese Taoist, philosopher and alchemist, Huainan Tzu, thus:--

"Duke Yang of Lu (1058-1053 B. C.), being engaged in a bloody battle with the army of the Han State, and fearing lest evening should close in and interfere with his victory, he raised his spear and shook it at the declining sun, which straightway went backward in the sky to the extent of three zodiacal signs!" (six hours).

While the Indian account, which is equally striking, is preserved in Hamilton's Key to the Chronology of the Hindoos, vol. ii, p. 224, as follows:--

"It is recorded in the life of Chrishnu (the black shepherd prophet of the Hindoos), that in the Cali year 1651 (which corresponds with our 1451 B. C., the very year in which Joshua entered Canaan), the sun delayed setting, to hear the pious ejaculations of Akroon, who descanted on the virtues of Chrishnu, as he journeyed to Bindreben; and that on his arrival in safety, that planet went down, making a difference of about twelve hours."

Now, it is not difficult to trace in all these strange stories the corrupted record of an event of which the true account is found in the Bible, each country, however, substituting the name of some national hero in the place of Joshua, while the stories themselves are naturally coloured with the necessary local conditions which the particular country required.

Mr. W. HOSTE ventured to criticize the interpretation of the reader of the paper, in spite of its originality and interesting character. "Sun, stand still," would mean nothing more than "Cease piercing us with thy vertical rays," and the answer of the Lord would be nothing more than the veiling of the sun, which so refreshed the Israelites that they could do in seven hours the work of a whole day. Certainly this would be in itself a miraculous result from so inadequate a cause; but we must note that the moon also was commanded to "stand still." We have heard of people being "Moonstruck," but otherwise the rays of the moon hardly need to be moderated. However, the Hebrew דָּמַם, of course, does mean "be silent," or perhaps "cease doing what you are doing." But sun and moon were not only shining, they were on the move, so "ceasing to move" is equally admissible as an interpretation. Of course, when we say the heavenly bodies ceased to move, we refer to results gradually experienced, not immediately detected. In verse 13 23 read, "The sun stood still (same word, דָּמַם) and the moon stayed" (עָמַד --

ordinary word for standing). But at the close of the verse it is recorded, "So the sun stood still (this time the word is דֹּם too) in the midst of heaven, and hasted not to go down about a whole day." This would certainly be rather a clumsy way of saying that owing to the refreshment from the cloud the children of Israel were able to do a day's work in a third of the time; at any rate, the expression need not imply anything more than that the apparent motion of the sun seemed to slow down. The word translated "Stand still" in verse 12 is the word translate "Rest in the Lord" in Ps. xxxvii, and in 1 Sam. xiv, 9, Jonathan uses it when speaking of the Philistines to his armour-bearer: "If they say thus unto us, Tarry (דֹּם) until we come to you: then we will stand still (עָמַד) in our place and will not go up unto them," so that the words seem by their usage to be closely allied, if not practically synonymous. "Stop what you are doing and stand still," or "Halt. stand easy," so that even if we accept the ingenious idea of the veiling of the sun by a stormcloud, the other though of an actual lengthening of the day, an arrest of the usual progress of nature by Divine power, is not ruled out.

If a mere meteorological change were intended in answer to prayer, it would seem unpardonable hyperbole to add, as in verse 14, "There was no day like that before it or after it, that the Lord hearkened unto the voice of a man." As a matter of fact, nothing is <u>said</u> of the sky being cloudless during the battle, nor of the consequent fatigue of the Israelites, nor of the storm-cloud, nor of the extraordinary refreshment resulting. All these have to be introduced to build up an interpretation. The expression, "So the sun stood still and the moon stayed, <u>until</u> the people had avenged themselves," conveys a clear impression of a prolongation of the day, quite apart from and independent of the experience of the Israelites. Joshua <u>ex hypothesi</u> would see that more time would be required to complete the victory than the seven hours of daylight remaining could possibly afford, and would frame his demand accordingly.

Mr. Hoste suggested that the hailstorm came from the northwest, acting as a barrage to prevent the Amorites escaping to the north and shepherding them back south, to be dealt with easily by Israel. Otherwise it would hardly seem likely that, even though their cities were in the south, the Amorites would have fled down as far as Asekah and Makkedah--cities belonging eventually to Judah--at the risk of meeting an encircling force of their enemies.

Lieut.-Col. G. MACKINLAY said: The very pleasant duty falls to me to propose a hearty vote of thanks to Mr. Maunder for his most interesting and helpful Paper. The Victoria Institute owes a deep debt of gratitute to him for what he has done in the past. The numbers present this afternoon testify to our high appreciation of him now, and we earnestly hope that he will continue his invaluable aid in the future. We tender him our heartfelt thanks. (Applause.)

Mr. THEODORE ROBERTS, in moving a vote of thanks to the Chairman, pointed out that there was a third explanation of Joshua's Long Day which had not been mentioned by the Lecturer or any of those who had taken part in the discussion, namely that given by H. A. Harper, the late Secretary of the Palestine Exploration Fund, that the continuance of the sunlight was due to refraction. For himself, he was satisfied with the Lecturer's explanation, which was confirmed by Ps. cxxi, 6, "The sun shall not smite thee by day nor the moon by night."

Lecturer's Reply

As I was not able to take any notes of what I said in reply to the discussion summarized above, I have been obliged to substitute for them an answer prepared later.

In reply to the Rev. J. J. B. Coles, I am very anxious to make it clear that I do not seek either to explain, or to explain away, the miraculous in Scripture history. But it is necessary to distinguish between that which is miraculous and that which is natural. In the present instance there is a dispute as to the interpretation of certain words in the narrative which makes it doubtful wherein the miracles consisted. Mr. Coles has referred to the going back of the shadow in Hezekiah's reign as being parallel to our present subject; I would venture to urge that there was in that case an unmistakable mark of a miracle in the fullest sense of the word. In God's government of the material universe we find that if the antecedents be the same, the consequent is the same likewise. Any apparent deviation from this law we ascribe to the direct action of the Almighty. Now the Lord Himself offered a choice to Hezekiah, which of two contrasted events should be given to him as a sign. Hezekiah chose the "hard thing," i.e. the result contrary to the natural order, and the Lord fulfilled that choice to him. The fact of the event conforming to Hezekiah's choice warrants us, I think, in saying that this was no natural consequent of the antecedents.

In the case now before us, our only authority concerning the miracle is contained in the chapter itself. The prophet Habakkuk (Hab. iii, 11) indeed alludes to the events recorded in the chapter, but it is no more than an allusion. In the book called Ecclesiasticus, or "The Wisdom of Jesus the Son of Sirach" (xlvi, 1-6) those events are fully described, but nothing is added to our knowledge thereby; indeed, one important statement is contrary to the Scripture, and I believe that in general members of the Victoria Institute approve the VIth Article of the Church of England, which expressly confines the name and authority of "Holy Scripture" to the books of the Canon, from which Ecclesiasticus, and the other books which we usually denominate "the Apocrypha," are excluded. Much more, then, can no authoritative evidence regarding a Scripture miracle be derived from any heathen source. I was very sorry, therefore, to find that a number of "old wives' fables," which I had hoped had long ago passed into deserved oblivion, were again brought forward. They bear on their face the signs of being mere "lying wonders."

Thus we have the alleged stopping of the sun in Mexico, which cannot have corresponded to "Joshua's Long Day," because Mexico is more than nine hours distant in time from Palestine, so that it was only two or three hours past midnight in Mexico at the moment when Joshua at Gibeon gave his command at noon. The sun, therefore, had not risen in Mexico, and no observation of it could have been made, either of its moving or of its ceasing to move.

The Chinese record is clearer still, for it states that the sun went backwards in the sky to the extent of three zodiacal signs. That is to say, the sun seemed to go back with respect to the stars, which implies, not that the diurnal rotation of the earth was reversed for six hours, but that the annual revolution of the earth round the sun was reversed for three months; in other words, that the year was put back by a full season. When we have swallowed this camel, there is still a gnat to be strained at, viz,--that the constellations of the zodiac are not visible while the sun is up.

The quotation from Herodotus is even less satisfactory, because it is evidence on very indirect hearsay, removed a thousand years from the occurrence. The statement of Herodotus further would imply not a single stoppage of the sun on one unique occasion, but of four distinct reversals of the direction of the earth's rotation. Probably Herodotus misunderstood some mystical statement of the Egyptian priests, and gave a literal meaning to what they were expressing figuratively.

The quotation from Alexander Hamilton is correctly given, but evidently Mr. Collett, who brings it forward,* has not studied Hamilton's book, which was written to show that Indian chronology was not chronology at all in our sense of the word; it was symbolical, and Hamilton's belief was that he had found a clue to the symbolism. The chronology is certainly unreal, but Hamilton was not aware that that particular phase of Indian astronomy was not ancient, but belonged to the dark ages between the sixth and eleventh centuries A. D.

Our only authority, then, for this narrative is the chapter itself, but there are three verbs in the chapter the interpretation of which is in dispute. The first is damam, "to be dumb," that is, "to cease from speaking"; the second, amad, is used as a parallel word to damam; and the third is uts, "to urge oneself," "to hasten."**

Of these three verbs damam is the dominant, seeing that Joshua uses it in his actual word of command; amad is the parallel verb, and implies that Joshua's command, whatever it was, was obeyed.

But "Be thou dumb" cannot, in the literal sense, be applied to the sun, for speech is not one of its properties, and we must seek some one or other of the activities which do characterize it as affording us the clue to the meaning intended in this passage.

The first property ascribed to the sun in Holy Scripture is that of giving light. In Gen. i, 14-18, we are told that "God made two great lights . . . . and set them in the firmament of the heaven to give light upon the earth." This is the primary function of both sun and moon. The sun has also other properties which are intimately connected with its giving light. It gives heat, it brings forth the fruits of the earth, it has power to "smite." Another property of the sun (and of the moon also), is that both appear to move in the sky (Ps. xix, 6); but whereas their shining is real, their movement is only apparent, and belongs in reality to the earth.

To bid anyone "to be dumb" is to bid him to cease from speaking, for the very word itself is derived from the action of closing one's lips upon one's speech. Where the person or thing addressed is by nature incapable of speech, then "Be dumb" must mean to cease from some action then going on, that can be likened to speech. Now, as we have seen, the sun has two characteristic activities, it gives light and appears to move. Thus the verb damam is sometimes used in Scripture, as Mr. Hoste suggests, in this sense of "Cease doing what you are doing." See Lam. ii, 18, quoted by Gesenius in this very connection: "Let not the apple of thine eye cease," that is, "Let not the apple of thine eye cease from weeping," Amad is used more frequently in a corresponding sense of "to cease" or "to leave off." Thus in Gen. xxix, 35, and xxx, 9, it is translated "left off"; Leah ceased to bear children. This meaning of "cease" or "leave off" may, if the object is in motion, carry the particular sense of ceasing to move, and both words are occasionally used in that special sense; but both are also used with the wider meaning of "leave off what you are doing," whatever that might be.

Whatever the action from which the sun was ordered to "cease," that order was given, and it took effect at noon, as we learn by collating verses 12 and 13: "Sun, be thoudumb upon Gibeon. . . So the sun ceased (to speak) in the midst of heaven and hasted not to go down about a whole day." In other words, when Joshua spoke, the sun was overhead both to him and to Gibeon, and the time was noon.*** As the length of the summer day in the latitude of Gibeon is fourteen hours, and as the Israelites had started from Gilgal the previous evening, for they "went up from Gilgal all night," when Joshua spoke they had been on foot for seventeen hours--marching, climbing the mountains, and fighting--and there were still seven hours of daylight before the sun was due to set. For seven hours, from its rising, the sun had been climbing up the sky to its culmination; for seven hours it would have to go down to its setting. If the command to the sun, "Be dumb," meant that it was to cease its apparent motion, and "to stand still" in the sky, that "standing still" must have been in the zenith, not on the western horizon; it must have taken place at noon, and not just as the sun was about to set.

Some commentators have treated the expression "hasted not to go down" as if it meant "stood absolutely still and did not go down at all." Such a paraphrase is unwarrantable; the sun's ordinary movement across the sky is the outcome of the smoothest and most regular motion that we know--the rotation of the earth on its axis. Any change in that motion is contrary to our experience. To hasten in that motion would be to go more quickly than is usual; "to haste not" does not mean to stand still, but to go more slowly than usual. "To go down" means movement in either case: quick, if the sun "hasted"; slow, if the sun "hasted not."

The question of interpretation comes, then, to a very narrow point. The sun was ordered to cease from one of two activities--from moving or from shining. Which was it? The moving does not belong to the sun, it belongs to the earth, to which no command was addressed. The shining does belong to the sun and is its great function.

But if it is asserted that the sun ceased from moving, not from shining, then those who assert this should face and answer the following questions:--

(1) Why should Joshua have wished the sun to be fixed overhead "about a whole day," before it began to go down towards its setting? We need not debate whether "about a whole day" means 14 hours, the duration of daylight at that season, or 24 hours, the complete rotation of the earth. In the first case, the interval between one sunset and the next would have been 38 hours; in the other 48 hours.

(2) If in appearance the sun "ceased" from moving "in the midst of heaven," and remained motionless there "about a whole day," how did Joshua know it? He could not have looked at the sun; it would have blinded him, and there was no object in the heavens with the position of which he could have compared it.

(3) How did Joshua determine his time that afternoon, and measure the length of that day, seeing that the sun, his only clock, was stopped?

(4) Further, the natural result of the stopping of the sun when overhead for "about a whole day," would be to increase the temperature of the air beyond anything that mankind has ever experienced. How did the Israelites escape the consequences of Joshua's strange desire?

(5) What did he hope to gain by it, and why was it granted to him?

Apart from the question of the correctness of the translation, two definite objections have been made.

First, why is the moon mentioned, seeing that its light and heat are negligible? My questioners forget that the difficulty--if difficult it be--is one which attaches to the narrative itself whatever translation we adopt. But I would suggest that Joshua was looking in the direction in which the Amorites were fleeing, in which case he would also have been looking in the direction of the moon, and could hardly have failed to see it.

Next, it has been objected that I have brought the hailstorm out of its proper chronological order. It is not I who have done so: it is done in the chapter itself. Verse 10 brings the Israelites to Makkedah, where they were at the going down of the sun, while verse 13, which chronicles Joshua's command shows that he was then at Gibeon, at noon; that is, it records the earlier event after the later. This preference for a logical, rather than a chronological, order is characteristic of many Hebrew narratives.**** Further, we are expressly told that these verses, 12 and 13, are extracted from another authority, the Book of Jasher; and it is clear that the extract has been inserted in the most appropriate place.

It should be noted that, whether we think that the sun stood still or whether that it was veiled by cloud, it still remains that the Israelites were at Gibeon at noon, and reached the end of their march at Makkedah at sundown.

It still remains also that the narrative itself gives a clear explanation in verse 11, of the statement in verse 14: "The Lord fought for Israel." It was literally true that "the Lord fought for Israel" when "it came to pass that as" the Amorites "fled from before Israel, and were in the going down to Bethhoron, that the Lord cast down great stones from heaven upon them unto Azekah, and they died; they were more which died with hailstones than they whom the children of Israel slew with the sword."

And now we reach the sentence to which the whole narrative leads up: "There was no day like that, before it or after it" (verse 14). It was unique. What made it so? Some have supposed that it was the length of the day, or the greatness of the miracle. That is not what the Scripture says. After all, how can we mortals judge whether a miracle is great or small? Is anything too hard for the Lord Whose power in infinite?

That day was like none other because of this fact, "that the Lord hearkened unto the voice of a man." That is what the chapter says; there is no hint that it was because the sun stood still, or that the day was long, or that it was a mighty miracle. Every reader of Holy Scripture knows that for one person "to hearken to the voice" of another mean one of two things--that he who hearkens either grants a petition made by the other person, or he obeys his command. Mr. Collett has pointed out, what is obviously true, that God has always heard and answered prayer; therefore this expression, "that the Lord hearkened unto the voice of a man" has in this case nothing to do with any answer to prayer. And Joshua did not offer any prayer; <u>he issued an order</u>: "Sun, be thou dumb upon Gibeon and thou, moon, in the valley or Aijalon." "And the sun was dumb and the moon ceased." The order was obeyed.

Joshua knew as well as we do that neither sun nor moon could hear him, and that even if they heard, they had no power either to obey or disobey; there are neither gods nor men; their acts or movements are the acts and movements of the Lord Himself, Who alone is their Ruler. God heard His servant's order and He fulfilled it; He hearkened unto the command of His servant and performed it. No event like this is recorded in the whole of the Old Testament; that day stands unique.

Joshua was a real man, with his passions and weaknesses like other men, like ourselves. Forty years long he had been the servant, the lieutenant, of the greatest man who ever lived before Christ came. Many are the advantages of such a position, but it is seldom that a man so brought up develops much self-reliance. So when the crushing burden that Moses had borne was transferred to Joshua, it is no wonder that he faltered. The Lord Himself knew His servant's weakness, and, as we read in Josh. i, the Lord repeatedly exhorted him to "Be strong and of a good courage," and those over whom he had been appointed to rule gave him the same exhortation. These words were not said to him because he was strong, but because he needed to be. Soon the day came that a most important duty was laid upon him; namely, to ensure that none of the spoil from Jericho, which had been laid under the curse, should be touched by any of his soldiers. In this, his first great responsibility, Joshua failed; the failure was not personal, as though he himself had hankered after the spoil, but clearly he had not so dominated his officers and men that they felt compelled to obey him. And so the sin of Achan followed and the defeat of Ai.

But Joshua made confession of his sin, and carried out faithfully the stern duty which then devolved upon him, and the Lord renewed to him his commission as Captain of the Lord's host. Then in that great battle which decided the fate of the whole of the south and centre of Canaan, Josehua felt that not only were the Israelites his to command, but the greatest and most exalted objects of nature were so as well. "Sun, be thou dumb upon Gibeon, and thou, moon, in the valley of Aijalon." And the Lord was well pleased with the faith and courage of His servant, and fulfilled his command. "There was no day like that before it or after it, that the Lord hearkened unto the voice of a man: for the Lord fought for Israel."

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* I am obliged here to point out that Mr. Collett's book, The Scripture of Truth, however excellent for the most part, has one short section in the eighth edition, pp. 284-288, entitled "Joshua's Long Day," which I would beg him to delete in toto from every future edition. This whole section is either wrong in its assertions, or misleading in the way in which they are applied.

** Gesenius, in his Lexicon, translated by S. P. Tregelles, 1881 Edition gives the following information:--

(1) Damam, p. 203. (1) To be silent, to be still. (2) TO BE ASTONISHED, CONFOUNDED. (3) TO BE QUIET, TO CEASE, TO LEAVE OFF. In a note it is added, "This root is onomatopoetic, and one which is widely spread in other families of languages, . . . it is an imitation of the sound of the shut mouth (hm, dm). Its proper meaning, therefore, is TO BE DUMB, which is applied both to silence and quietness."

(2) Amad, p. 637. (1) To stand. Used of men, and of inanimate things. Followed by propositions--(a) TO STAND BEFORE A king, i.e. TO SERVE OR MINISTER to him; (b) TO BE SET OVER, TO CONFIDE, TO STANDBY anyone. (2) TO STAND for-TO STAND FIRM, TO REMAIN, TO ENDURE, TO PERSIST, TO PERSEVERE, hence TO REMAIN in the same place or state. (3) TO STAND STILL, TO STOP, as opposed to go on one's way, to proceed.

(3) Uts, p. 23. (1) To urge, to press anyone on. (2) TO URGE ONESELF, TO HASTEN. (3) TO BE NARROW, STRAIT.

*** See Dean Stanley's Sinai and Palestine, pp. 207, 214.

**** Col. Mackinlay has shown us in his book Recent Discoveries in St. Luke's Writings, how much additional light is thrown upon Scripture by the readiness with which the sacred writers abandon the strict sequence of events when a special emphasis has to be brought out.

NOTE--It lies aside from the main subject of the above paper, but it may give an unsuspected illustration of the definiteness of the relative apparent movements of the heavenly bodies to note that Joshua's description of the positions of the sun and moon carries with it the implication that in the year of the events under our consideration. Tammuz, the fourth month of the Jewish calendar, coincided, almost exactly, with July of our present calendar. (See p. 132, lines 8 and 9.)

As the Mosaic calendar had a double relation, being based partly upon the natural year, it followed--as twelve such months were eleven days short of a complete year--that it was necessary to intercalate a thirteenth month occasionally; such intercalation being introduced in seven years out of every nineteen. Thus the months of the Jewish year vibrate to and fro with respect to the months of our calendar, which is based on the solar tropical year.

But if Joshua's great victory had been gained at midsummer, on the day of the solstice, then since the moon was just about to set when the sun was on the meridian, "in the midst of heaven," the former must have been close to the point in the heavens of the spring equinox, and could not have set over the valley of Aijalon, but must have set due west. If we assume any date for the battle before the solstice, then the moon would have set south of west; only if the battle took place after the solstice could the moon have set north of west, and not until the solstice was past by a full month could the moon have set over the valley of Aijalon. The battle must have taken place, therefore, about the 22nd or 23rd of July as well as about the 21st or 22nd of Tammuz.

THE SHADOW RETURNING ON THE DIAL OF AHAZ

Annie S. D. Maunder, F. R. A. S.

The laws of nature are determinate in their action; a certain result must follow whether or no we demand the opposite. Therefore it is not possible to explain, or explain away, the return of the shadow through ten steps on the staircase of Ahaz, as due to some rare (therefore misunderstood) natural happening in the heavens, and I will make no attempt to do so. I can only show you the circumstances--astronomical, geographical, and historical, in which the miracle is set.

The shadow had already gone down ten steps and might go down at least ten steps more. The time therefore was early in the afternoon, not later than half-past three if the summer was midsummer, nor later than half-past two, if midwinter; the shadow was thrown easterly, stretching towards south of east in the summer months and north of east in the winter, but never further north than E. N. E., nor south than E. S. E. We must look, then, for a terrace of steps in Jerusalem and for an appropriate building which might cast such a shadow. The building was "the house of thy (Hezekiah's) father"[1] (according to the Septuagint version), but this description might apply to the Royal Palace or to Millo, both south of the Temple area; from both, steps went down to gates in the wall.

"The mountains are round about Jerusalem," so that the city is hidden from every direction except one gap towards the S. E., down which may be seen the wilderness of Tekoa, the Dead Sea, and the mountains of Moab on the distant horizon. Within the city in this direction is a spur with three elevations, on which were successively, from north to south, the Temple itself, the Palace, and Millo the fortress, this last having been strengthened after Jebusite times by David,[2] by Solomon,[3] and by Hezekiah[4] himself. Millo was originally the highest of the three, but was cut down by the Maccabees (so Josephus[5] tells us), even to a slope so that the Temple might dominate the whole. Before the Temple (to use the Biblical term for the eastern side) was the Mount of Olives, and between the two, but close outside the city wall, was the Kidron Valley, in which was the spring Gihon, and "the conduit of the upper pool in the highway of the fuller's field." Here Ahaz[6] went to consider the water problem for the city, when threatened by Rezin and Pekah, and was met by Isaiah; here Hezekiah[7] dealt with the same problem and made his aqueduct beneath the spur, coming out on the west side of the City of David for "why should the kings of Assyria come, and find much water?"[8]; here the envoys of Sennacherib[9] came to speak treason and sedition to the men on the city wall. In this part of the wall were two gates, the Horse and the Water Gates, and in the time of Joash of Judah we know that steps went down from the Temple to the Horse Gate, and thence up to the King's House, for such was the description at the slaying of Queen Athaliah.[10] Joash himself was killed by his servants "in the house of Millo, which goeth down to Silla,"[11] and as Silla means "highway," we naturally connect this with "the highway in the fuller's field." We do not know whether this descent from Millo was rather to the N. E. to the Horse Gate, or rather to the S. E. to the Water Gate. If we knew at what season of the year Hezekiah took ill, it might help to decide.

Can either of these staircases be connected specially with King Ahaz? There is perhaps a slight balance of evidence in favour of the King's House and the Horse Gate stairway. For after Ahaz had made an altar after the pattern of one at Damascus[12] and had himself sacrificed on it and brought the brazen altar made by Bezaleel for himself "to inquire by," then he made "the Covert (portico) for the Sabbath that they had built in the house, and the king's entry without, turned he from the House of the Lord for the king of Assyria."[13] This is as in the Hebrew text, but the Septuagint version runs, "and he made a base for the throne in the House of the Lord, and he turned the king's entrance without in the House of the Lord after the presentment of the king of the Assyrians."[14] Whichever rendering is the right one, there seems to be some obscure reference to an alteration of the king's way to the Temple, made by Ahaz because of the king of Assyria.

Already and for a century to come, the king of Assyria was to be for Judah, "King Jareb,"[15] the King Adversary, as Hosea calls him--whether he be Tiglath-Pileser or Shalmaneser, Sargon or Sennacherib or Esarhaddon.

King and priest had distinct offices with the Hebrews. Babylonia was a theocratic nation wherein the king was subordinate to the priest, and every king over Babylon--legitimate, Assyrian or Chaldean--had to "take the hands of Bel" in Babylon once a year on the proper day. Assyria was a military nation; the king was the Commander of the Assyrian army, and the army was the people; from Tiglath-Pileser to Assurbanipal, Assyria was fighting on all sides for world dominion until the nation was bled white. This is an inevitable result almost. Centuries earlier king David (a great general) having been successful in all his wars and having been promised that his heirs would sit on his throne[16] "for a great while to come," sought to hasten by the sword the coming in of the kingdom of God, so he numbered Israel and Judah for a national army. He was stopped and offered the choice of famine, defeat or pestilence[17]--his own country and the countries he fought against would have suffered all three had he carried through his intention.

In Babylon the temples of the gods were the chiefest public buildings; in Assyria the king was supreme and the temple was but a king's chapel attached to the palace. Uzziah, also a warrior king, "was marvellously helped till he was strong."[18] Then he meant to do like Jeroboam of Israel and Asurnirari of Assyria, and went into the Temple "to burn incense upon the altar of incense" and he became a leper till his death. So too did his grandson Ahaz in the year 731, and he did it (if the Septuagint version is correct) "after the presentment of the king of the Assyrians."[19]

Tiglath-Pileser's first business was to save the priests and king of Babylon from the Armeans on their border. The king, Nabonassar, seems to have been what Jeremiah would call "a quiet prince."[20] and was always a faithful vassal of the Assyrian king. On his death in 734 there was an insurrection, the chief rebel being a Chaldean prince, Merodach-baladan, "king of the sea-land," and rather against his will and convenience Tiglath-Pileser "took the hands of Bel" a couple of years before his death in 727. Besides Babylon, he had to guard his northeast border, through Armenia to the desert towards Elam, where, from 733 on, the encroaching Medes began to be felt; he had also to control Syria. Here he conquered Damascus, put Pekah to flight but did not pillage Samaria, and came into contact with Ahaz, whom he met at Damascus, but "he helped him not."[21]

We know little of his successor Shalmanesee except from the Bible, he spoilt the fortress of Beth-Arbel[22] (probably in Galilee) and besieged Samaria,[23] where Hoshea, the Assyrian viceroy, had refused him tribute.

It was Sargon who actually took Samaria. Under him the Assyrian empire came into collisions with nations equal in power to its own. The newly immigrated Iranian tribes from Helmend and Kabul and Holy Merv were pressing down south of the Caspian and towards Elam with a vigour that the earlier Median tribes had lost. Into Cilicia (whence Assyria got its metals) there was an invasion of other Indo-European tribes--the Cimmerians from Gomer, north of the Black Sea--and it was fighting against these that Sargon lost his life in 705. In the west, Egypt--albeit "a broken reed"[24] to any nation that it helped--was come in, remaining an adversary till the Empire's end. To quote The Cambridge Ancient History (vol. iii, p. 46): "The enemies Sargon had to meet arose from four quarters: (1) Union of Chaldea and Elam in the south; (2) medley of peoples in the north and north-east; (3) Phrygia in the north-west; (4) Syria, Palestine and Egypt in the south-west.

Merodach-baladan got the support of all the Chaldean tribes, which united with the Elamites, and also (perhaps later) with the Arabians. In 721 he "took the hands of Bel" at the new year's festival. In 720 Sargon took the field against him, but the result was uncertain, and it was not until 710 that the great attack was prepared which conquered him. Even then Sargon reinstated him in his princedom of the "sea-land," and Merodach-baladan seems to have remained his faithful vassal until Sargon's death. As Sennacherib spent his first two years rebuilding Nineveh, and did not go to Babylon to "take the hands of Bel" until 703, Merodach-baladan was able to make strong his claim and put out the Babylonian appointed as viceroy. In 702 Sennacherib put in another Babylonian, Bel-ibni, and himself went west against Palestine. Next year he came back, for Bel-ibni had joined up with Merodach-baladan; he finally crushed both and made his own son viceroy.

At what time then did Merodah-baladan's envoys come to Hezekiah to "inquire of him of the wonder that was done in the land?[25]" Merodach-baladan was "a wretched soldier,"[26] but certainly also a first-class intriguer, and no doubt he plotted at all opportune intervals from 733 to 699. He seems to have made Tiglath-Pileser, Sargon, and Hezekiah all do much as he wanted them. Now, Isaiah distinctly says that the envoys came after "those days,"[27] namely, "the i4th[28] year of Hezekiah," when "Sennacherib, king of Assyria, came against all the defenced cities of Judah and took them" Col. Shortt, however (in his paper of December last), says that this "is an error" on Isaiah's part.

Isaiah was the recognized historian[29] for (at least) Uzziah's reign, and though he was a prophet, it does not follow, necessarily, that he was vague or inaccurate as to when events took place in which he himself took so active a part. Let us then assume that Isaiah was right in his dating and test this by the other dates that he gives.

In the Book of Isaiah, five points of time are noted:--(1) "In the year that king Uzziah died"[30]; (2) "In the year that king Ahaz died"[31]; (3) "In the year that Tartan came unto Ashdod (when Sargon, the king of Assyria, sent him), and fought against Ashdod"[32]; (4) and took it"[33]; (5) "In the fourteenth year of king Hezekiah, Sennacherib, king of Assyria, came up."[34] From Assyrian history we know the dates of (3), (4) and (5) as 714, 712 and 701 respectively. The

last date would give Hezekiah's first year as 715 and this, therefore, as "the year that king Ahaz died."[35] Ahaz reigned 16 years so that he came to the throne in 731, which is therefore "the year that king Uzziah died."[36] But he was regent at least as early as 735, since in that year the kings of Israel and Damascus conspired to depose him and substitute for him "the son of Tabeal."[37] Probably this meant that the regent Jotham died in 736 or 735. In chapters 7-9 of his book, Isaiah relates this intrigue. Chapters 9-10 form the prologue to a series (chapters 13-30) of "burdens" (sometimes translated as "visions," sometimes as "words" by the Septuagint), concerning certain nations, and these nations are just those enemies from the four quarters that Sargon had to meet; they are given almost in the very order in which The Cambridge Ancient History enumerates them, especially is the reliance upon Egypt emphasized, and Egypt was not a factor in Tiglath-Pileser's military problems. Also the prologue represents the Assyrian king as saying: "Is not Calno as Carchemish? Is not Hamath as Arpad? Is not Samaria as Damascus" . . . Shall I not, as I have done unto Samaria and her idols, so do to Jerusalem and her idols?"[38] But Carchemish was taken in 717, Hamath was made an Assyrian province in 720, and Samaria was captured in 721. There seems small doubt then that all the "burdens" were seen subsequent to 717. But the "Burden of Babylon: was seen "in the year that king Ahaz died,"[39] which accords well with the date 715. The reference to the three-year siege (714-712) of Ashdod[40] comes in between the "Burden of Egypt"[41] and the "Burden of the Desert of the Sea."[42]

It seems to me that the evidence is strong that chapters 10-30 of the Book of Isaiah are concerned with Sargon's reign of 721-705; if this is so, there was no confusion on Isaiah's part between Sargon's campaign in Palestine between 715 and 712, and Sennacherib's campaign in 701 and later. It is equally strong that Hezekiah's 14th year was 701. This must also have been the year of his mortal sickness, for 15 years[43] were added to his life and he reigned for 29 years.[44] Like Merodach-baladan, Hezekiah probably took advantage of Sennacherib's tarrying at Nineveh to give up paying him the tribute he had rendered to king Sargon. He also finished his great conduit, but there is a suggestion in "the burden of the valley of vision,"[45] that this was begun in 716 or 715, probably by Ahaz (who 20 years earlier was troubled by the city's exposed water supply),[46] for the reproach there levelled is one deserved by Ahaz rather than by his son. "Also he strengthened himself and built up all the wall that was broken down, and raised up the towers, and another wall without, and repaired Millo in the City of David."[47]

And then he was stricken to death.

Hezekiah lay in the King's House and looked down the steps which, by the Horse Gate, went up again to the Temple. In the distance, on his right hand, was the Mount of Olives, above which the sun had that morning risen; the sun (now sloping towards the west, for it was about 3 o'clock in the afternoon) had already cast the shadow of his father's house upon the upper steps of the staircase. Then Isaiah brought him the message: "Thou shalt die and not live";[48] and went out into the court between the King's House and the Temple precincts. Hezekiah turned his face to the wall and prayed, and straightway Isaiah was bade return and tell the king that he would recover and go up to the House of the Lord on the third day, and that God would defend this city.[49] Perhaps Hezekiah looked out to his right to the conduit of the upper pool in the highway of the fuller's field, between the city wall and Mount Olivet, where his father Ahaz--also in imminent danger of invasion--had stood and been offered a sign for safety,

a sign either in the depth or in the height,[50] and had refused it. Now he asked a sign and was also given a choice--between an easy, almost a natural sign, and a hard, nay, a sign out of all nature. Should the shadow go forward ten steps or go back ten steps: as Amos had put it half a century earlier, making "the day dark with night," or turning back "the shadow of death into the morning."[51]

"Faith is the substance of things hoped for, the evidence of things not seen,"[52] and Hezekiah grasped this substance and chose the hard sign. It was a light thing for the shadow to go down ten steps to the east; every afternoon it happened, and a mere rain cloud over the sun until its setting would extend the shadow to the horizon. But the sun must always go down steadily to the west, and it could not again bathe the steps in sunlight until it rose again next morning over the Mount of Olives. Never did any light appear in the afternoon to the north or south or east that would shine on those steps and drive back the shadow.

Never? Perhaps once. For when king Solomon brought up the Ark of the Covenant of the Lord out of the City of David, which is Zion, and the singers were praising the Lord, and saying "For He is good; for His mercy endureth for ever,"[53] then the glory of the Lord filled the House. Twice had Isaiah seen this glory in vision; once while Uzziah was still alive: "upon every dwelling place of Mount Zion, and upon her assemblies, a cloud and smoke by day, and the shining of a flaming fire by night: for upon all the glory shall be a defence";[54] once again the year king Uzziah died, the Temple was filled with the glory.[55]

The "burdens" of Isaiah give us a review of this great world contest. The origins of the wars are stated and their far-reaching consequences. But these origins are not the desires for world dominion, nor for the extension of trade; the theme of the "burdens" is neither strategy nor intrigue, victory or defeat, the supremacy of one nation or the breaking up of another. These are so transitory as scarcely to need mention. The origins were summed up in the words of Hosea: "For the Lord hath a controversy with the inhabitants of the land, because there is no truth, nor mercy, nor knowledge of God in the land. By swearing and lying, and killing, and stealing, and committing adultery, they break out, and blood touches blood."[56] Because of all these when the Lord sends the Assyrian as the rod of his anger,[57] neither Confederacy, nor Peace Conference, nor League of Nations could avail to stop the war. They could not do it then; they cannot do it now.

Isaiah saw clearly the course of events in several directions. For instance, in the "Burden of Babylon," he saw that God would "stir up the Medes against them which shall not regard silver; and as for gold they shall not delight in it."[58] Anyone who has read the Mihr Yasht will perceive how apt a description this was of Iranian integrity, and what a power it gave to such a people. Again, immediately after that same "burden," he warns Palestina not to rejoice that "the rod of him that smote thee is broken: for out of the serpent's root shall come forth a cockatrice, and his fruit shall be a fiery flying serpent . . . . thou, whole Palestina, art dissolved: for there shall come from the north a smoke."[59] This gives the succession of Sargon, Sennacherib and Esarhaddon, and the coming advance of the northern hordes. These may be cases of far-seeing judgment of the characters of men and nations; they may not be prophecy.

But there are other passages which cannot bear this interpretation, for the contrast between the earthly circumstances and the message which the prophet must give is so fierce, that he can only speak with stammering lips. When Ahaz stood at the conduit of the upper pool, and refused a sign, yet a sign was given him that a Virgin should conceive and bear a Son and call him God-With-Us.[60] This was that Ahaz who burnt his own children in the fire.[61] In the year that king Uzziah died, Ahaz desecrated the Temple,[62] yet it was then that Isaiah saw the Lord high and lifted up, and the Temple was filled with His glory.[63] When Ephraim saw his sickness and Judah his wound, then Ephraim went to the Assyrian and sent to king Jareb, yet Hosea says of these repentant sinners: "After two days will He revive us; in the third day He will raise up and we shall live in His sight"[64] and so it came to pass 750 years after this saying.

Two were signs, or rather symbols. Even in his unwillingness Jorah was made a type of our Lord when in the tomb.[65] Half a century after Jonah's reluctant preaching to the Ninevites, the sign of Hezekiah's choice was to reveal that not for always was it to be "appointed unto men once to die."[66] As the prophet Paul said, "We shall not all sleep, but we shall be changed,"[67] but for the fulfillment of this we still wait.

Discussion

The CHAIRMAN (Colonel Hope Biddulph) said: The paper to which we have listened evinces a careful study of the Scriptures and of the locality in which the event recorded took place, and, moreover, it presents us with a vivid picture of the times.

I think, however, that some here present, like myself, may feel disappointed that the writer has not attempted to offer an elucidation of the miracle. Though loath to "rush in where angels fear to tread," I venture to offer a suggestion for consideration. Some persons hold a miracle to be something that cannot be explained by natural means, and think that an occurrence ceases to be a miracle if it can be so explained. It is a fact that we are surrounded by many marvels in our daily life, and experience so many indeed, that only events of a unique character or of rare occurrence arrest attention and excite interest. At the same time science is continually discovering processes which have hitherto been inexplicable, and I would suggest that the Creator works by natural laws when what we term supernatural events take place.

The case of the shadow returning ten degrees on the dial of Ahaz seems, on the face of it, to be akin to that of Joshua's Long Day. I am aware that the latter is explained by some in a sense totally different from that usually drawn from the test of the Authorized Version of the Bible, and I do not propose to argue the point. But, as periods of light and darkness are greatly extended in Polar regions, owing to the inclination of the earth's axis to the plane of the ecliptic, it appears reasonable to suppose that some change of the angle may have been effected causing an extension of daylight in Palestine on the occasion of Joshua's Long Day, and in the same manner also the retrogression of the shadow on the staircase of Ahaz.

If it be objected that such a change would be catastrophic, I would point out that Nature has safety valves in her operations which outwit purely scientific reasoning. A striking instance of this is found in the temperature of water,

which contracts instead of expanding when heated between 32° and 40° Fahrenheit, a provision which prevents rivers from being frozen solid and killing the fish (see Transactions, Victoria Institute, vol. lix, p. 239).

I ask you to accord a hearty vote of thanks to Mrs. Maunder for her interesting and instructive paper. Vote accorded with acclamation.

Dr. THIRTLE said: The paper to which we have listened bears on the surface evidence of careful investigation conducted by a lecturer whose name occupies a place of signal honour in the proceedings of the Victoria Institute. Whether the "degrees" on the sundial of Ahaz represent movements on such an instrument as passed for a sundial in subsequent times, or whether they indicate an architectural feature of the king's palace, is a point that is hardly material. Certain it is that, on the day specified in the record, something happened which made a profound impression upon King Hezekiah. More than that, while the incident gave immediate comfort to the king it was noised abroad among peoples in distant lands, for, as we are told, ambassadors came from Babylon to Jerusalem with the express purpose of inquiring as to "the wonder that had been done in the land, and in actual history, as we also learn, the period of fifteen years was added to the king's life. Now, not by way of criticism, but as following upon the lecture, I wish to point out what the record makes clear, that the king not only enjoyed the blessing of added years, but ordered his after life in the light of a great experience. While suffering from the leprous boil, which disabled him from entering the sanctuary, the king besought delivery with the express purpose that he might "Go up to the house of the Lord," and so join the pious Israelites of his time in divine worship. Being marked for death, however ("Set thy house in order, for thou shalt die and not live"), had for him a deeper meaning. He was an unmarried man, and his death would mean the end of the Davidic dynasty, and what is more, it would involve a tragic violation of the divine purpose, solemnly pledged in Covenant, that the throne of David should never fail of an occupant in succession to a righteous ruler (see I Kings ii,4). It was in these circumstances that the king wept and prayed, and having at length been raised, as it were from death, he exclaimed (Isa. xxxviii, 18, 19): "The grave cannot praise thee, death cannot celebrate thee; the living, the living, he shall praise thee, as I do this day: the father to the children shall make known thy truth."

The king recovered and the Davidic dynasty was prolonged; hence a godly king was not to despair of a successor on the throne. When giving expression to these facts the king made another statement, which should command serious attention; he said: "The Lord is ready to save me; therefore we will sing my songs to the stringed instruments all the days of our life in the house of the Lord." "THE LORD," that is Jehovah: the form of address should be noted by those who would inquire whether the king's pledge was kept. Verily, that pledge was kept, and the result appears in the Psalmody of Israel, in songs to JEHOVAH, sung in "the house of JEHOVAH," fifteen in number, corresponding to the years added to the king's life. Find these songs in the Book of Psalms, Nos. 120 to 134, each of them entitled "A Song of the Degrees." However we may read in our common versions, the title is "A Song of the Degrees," the definite article is plainly there, indicating the association of the songs with the episode of "the degrees" or stairs, as the episode has come before us this afternoon.

Let it be clear that the songs are fifteen in number, no more, no less; the titular form stands between the series, individualizing each and all of the songs. Moreover, the allusion is precise, and should save us from accepting a loose reference to undefined ascents, steps, or movements, as imagined in pilgrimage, processions or anything else. The word "degrees" in the title shir-Lammaaloth, a song or lay, defines a marvellous occurrence in the life of one of the greatest kings of Judah.

Is it said, by way of criticism, that the "Songs" before us have been otherwise explained? The reply is that a mis-explanation cannot be blamed upon the Psalter. Scores of theories of the Psalter and its constituent parts have come and gone, and, at times, as it were by divine illumination, a new light may surprise a patient student. Certain it is that the fifteen songs presume the existence of the temple and its ordered worship, and, therefore, they cannot be exilic as some have contended. Other explanations are equally deficient as it becomes clear on a dispassionate investigation. Apply the test--the man who goes to the Songs with an intimate knowledge of the story of Hezekiah will find in every one of them a response to situations and circumstances belonging to the life of the king who said he would "sing his songs in the house of the Lord," i.e. Jehovah, as long as life might last. An important point is found in the fact that the name JEHOVAH dominates the series. It occurs fifty times, and no single song is without the sublime and ineffable name of the God of Israel.

Lieut.-Colonel T. C. SKINNER said: My first impression after a hurried reading of the paper was one of disappointment that the distinguished author had left the astronomical problem unsolved, but more careful perusal disclosed something vastly better. If I read aright, the author's view--most wisely left to suggest itself--is that the turning back of the shadow may have resulted from the appearing of the Glory of the Lord, the Shekinah Glory, in response to Hezekiah's faith. If so, she has brought out for us more than the most satisfying explanation along lines of natural science could ever do, the fact, viz., that God Himself is greater than all His laws as manifested in natural phenomena.

Written Communications

Rev. J. J. B. COLES wrote: Mrs. Maunder's paper on the Sundial of Ahaz is naturally associated in our minds with the valuable essay on "Joshua's Long Day," by the late Mr. E. W. Maunder, widely known as the author of The Astronomy of the Bible.

Both Joshua and Hezekiah were specially favoured servants of God, and Isaiah a leading prophet. The ambassadors from Babylon were greatly impressed by "the wonder wrought in the land." (2 Chron. xxxii, 31). I remember reading that ancient chronologists have asserted that there is a day's difference between astronomical chronology and ordinary reckoning.

Colonel A. G. SHORTT wrote: I see the lecturer differs somewhat from my chronology. I wish I could think that she was right. The fall of Samaria is put in 721, the invasion by Sargon in 714, and that of Sennacherib in 701. So far so good! but in making 714 the first year of Hezekiah endless difficulties are raised, for he was certainly reigning in 721, by 2 Kings, xviii, 1,9,10; and also the agreement between the chronology of Judah from Hezekiah to Zedekiah with secular history, is destroyed.

The Revised Version is followed in the substitution of "steps" for "degrees" but though the Hebrew word does mean "stairs" there is no certainty that it does so here, or in Ezek. vi, 4, 6, where it is translated "images" or "sun-images." The actual cause of the movement is not touched upon. The late Professor H. H. Turner of the University Observatory in Oxford, suggested to me that it was due to a rare phenomenon, a sun mirage, when the sun became a pillar of light which lasted for a long time after sunset. This appears to me to be a more likely explanation than any I have yet seen.

Miss ETHEL D. JAMES, B. A., wrote: I would like to suggest an explanation that might enable one to conceive a possible method of God's acting. We are told that though we now know only in part, we shall one day have full knowledge. Though our knowledge is still very partial and only such as a finite created being can grasp, yet one or two among us have grasped a little farther than others. The great mathematician Einstein, in showing that even over short distances and short periods light can be proved to bend, suggests that possibly God bent the light rays a trifle differently from the effect produced by the unaided laws and forces of nature, and thereby produced a transitory and local result. This seems a simpler explanation than any possible slowing down and reversing of the earth's rate of rotation.

Dr. JAMES KNIGHT wrote: Permit me to offer one or two comments on the opening paragraph. This view of laws of nature is antiquated. The new teaching, really a return to Huxley's caution of fifty years ago, declares roundly that natural laws govern nothing, are not obeyed, and do not belong to the nature of things. They are indeed, "but formulae for the prediction of an observable occurrence," and that the prophets sometimes prophesy falsely is easily seen when we study the method by which a so-called "law of nature" is formulated. Modern physics has accepted Heisenberg's principle of indeterminacy, and J. W. N. Sullivan, commenting upon the application of this, asks, "Are we to interpret the principle as an indication that the law of strict causality does not apply to the fundamental operations of nature? At the present time scientific men are of two minds about this matter" (Outline of Modern Knowledge, 1931, p. 111).

Likewise, Prof. Wolf, writing on Recent and Contemporary Philosophy, discusses this general Principle of Indeterminacy (or of Uncertainty), "according to which, as some would maintain, there is no such thing in the physical world as that causal determination on which the older scientists insisted, and on which the mechanistic philosophy was based" (op. cit., pp. 590, 591).

In view of these modern pronouncements in the spheres of physical and mental science respectively, it would seem that Mrs. Maunder has been too generous to the materialists, who, of course, are bound to deny, not only this miracle, but all physical miracles.

Mr. G. B. MICHELL wrote: There is only one point that I find to criticize in this more interesting paper, namely, the chronology of the reigns of Ahaz and Hezekiah. The authoress gives "the year that King Ahaz died" as 715 B. C. on the strength of this being Hezekiah's first year, since his "fourteenth" year when Sennacherib came up against him was 701. This is also assumed to be the year of the sickness and recovery of Hezekiah. But, if so, then he died in 686, since 15 years were added to his life.

Now, it is manifestly impossible to fit in (1) the 55 years of Manasseh, (2) the 2 years of Amon, (3) the 31 years of Josiah, (4) the 11 years of Jehoshaz and Jehoiakim, and (5) the 11 years of Jeconiah and Zedekiah--110 years in all--between 686 and 586, the date of the end of the dynasty. Even if we take these last reigns as beginning in the same year as the last of its predecessor, the death of Ahaz must have occurred in 721 B. C., not 715.

I quite agree that the "fourteenth" year of Hezekiah when Sennacherib came up, must have been 701 or 702. But was this the same "fourteenth" year when he was sick? I maintain that it is impossible. For it was after the recovery of Hezekiah that Merodach-baladan, King of Babylon, sent his ambassadors to Hezekiah (Isa. xxxviii, 1). This could not have been after 701, for Merodach-baladan had been finally conquered by Sennacherib in 704, and deposed and replaced by Bel-ibni in 703. This is no "error on Isaiah's part," for the words "In those days" of xxxviii, 1, cannot refer to the events of chapter xxxvii, for that chapter closes with the death of Sennacherib and the accession of Esar-haddon in 682 B. C., the words immediately preceding "In those days."

In what days then? Evidently, "at that time" of xxxix, 1, to which the following oracles of the rest of the Book refer.

Hezekiah must have had two fourteenth years, just as James I of England and VI of Scotland had two fourteenth years, and so he had two first years, one in 721 when his father Ahaz died and he became king of Judah, and one in 715, the year of Sargon's second plantation in Samaria, when Hezekiah evidently assumed the rule of all Israel. There is plenty of evidence that he did this. It was in the fourteenth year of his reign over Judah that he fell sick and the sign under discussion was given. For the whole story concerns Judah alone. But it was in the fourteenth year of his reign over the whole nation that Sennacherib came up against him. For that concerned the whole land. No other theory will fit the historical facts. But this is consistent with all.

The date 708 would suit well the embassy of Merodach-baladan. For although Sargon of Assyria became suzerain of Babylon in 709, he left Merodach-baladan, who had been the native king of Babylon since 730, pretty much to his own devices, or which this embassy would be a very natural one. Babylon, though it had no military might against Assyria, possessed in the religious supremacy of its Sumerian priesthood a strong and a dangerous prestige which finally destroyed the Assyrian, and as Isaiah foresaw, the Chosen People too.

Mrs. Maunder acknowledges that Ahaz was reigning at least as early as 735, but she makes him "regent" at that time. For this we have no evidence whatever. As Syria was conquered by Pul, and Rezin slain, in 732, a date when the child whose birth was prophesied in Isa. vii, 14, 15, would be only two years old, these events recorded in that chapter as occurring in the days of Ahaz must have been in 735.

The learned authoress also says "Ahaz reigned 16 years, so that he came to the throne in 731, which is, therefore, 'the year that king Uzziah died,'" thus eliminating Jotham altogether. But Jotham must have had an independent reign of his own after the death of his father, as well as his long regency for Uzziah. For the language used of his reign in both Kings and Chronicles is explicit, and precisely the same as the terms used of Ahaz, Hezekiah and the other kings,--"And Azariah slept with his fathers: and they buried him with his fathers in the

city of David: and Jotham his son reigned in his stead." Compare 2 Kings xv, 38; xx, 1, The death of Uzziah must, therefore, be placed at least two or three years before 735, say in 739. For in 741 Azariah was still alive, since in that year nineteen districts of Hamath revolted to him. See Schrader's Cuneiform Inscriptions and the Old Testament, vol. 1, p. 214. And Menahem's tribute to Pul (2 Kings xv, 19) was in 738.

We have, then, for Mrs. Maunder's "five points of time" seven, not five, viz. (1) "In the year that king Uzziah died," say, 739; (2) "In the year that King Ahaz died," 721; (3) "In the year that Tartan came unto Ashdod," 714; (4) "and took it," 712 (711); (5) the sickness and recovery of Hezekiah, 708; (6) the embassy of Merodah-baladan, say, 707; and (7) Sennacherib came up against Jerusalem, 701 (702).

These alterations of dates in no way affect the main argument of this valuable paper, with which I am in cordial accord.

Lecturer's Reply

I would like to emphasize two points about the returning of the shadow: it was local, not something that affected other regions; it was a large return, and went back over a big extent of ground.

The Chairman has urged two points also. The Creator, he says, works by natural laws. I think each miracle should be considered on its own merits; I may instance one which was certainly accomplished by natural causes, that of the piling up of the waters of the Red Sea by wind, so that the people walked over dry-shod. But this miracle of the returning shadow I consider to be the case in the Old Testament of a miracle which was not in any way due to natural causes, but to the "finger of God" alone. The Chairman's second suggestion that the return was due to a change in slope of the earth's axis comes under his own ban as being "unnatural" and under mine since this must affect the whole world and not Jerusalem only.

In reply to Col. Shortt, the Hebrew word maalah or maaleh, or its equivalent in the Septuagint, anabathmos, always means "ascent" (steps, degrees, going up, etc.) either physical or ethical. But the "images" (of the Sun) in Ezek. vi, 4, 6, is quite a different word, chamanim, "idols" (or Baal). If he turns to Zeph. i, 4, he will see the terms in which the Word of the Lord came concerning the kemarim, the idolatrous priests who ministered in the worship of Baal and the host of heaven. Can we suppose that the Lord would use such idols--especially evil, when in the holy precincts of the Temple--as medium for this great miracle of healing? I knew Professor Turner well, and his keen interest in all accurate observation of astronomical phenomena; I do not suppose that he ever read this narrative with attention; had he done so, he would not have suggested a sun-pillar which occurs after sunset as the cause of this returning shadow, which must have taken place in the early afternoon. Moreover, I put it to Col. Shortt, if this were the cause of the returning sunlight, what meaning could Hezekiah have put on the alternative choice that the shadow should go forward ten degrees: If the sun was on the horizon or below it, the shadow extended to the horizon; how could Hezekiah see it go farther?

With Miss James I agree entirely, that it is possible that God should work a miracle in any way. Therefore, I have not tried to explain how this miracle was done. I have only brought to memory that there was one previous occasion when the Glory of God so covered the Temple that it would have lit up the ascent to the house of Hezekiah's father. I do not say that this was the means actually employed.

I need not go into Dr. Knight's objection to my "Antiquated view of the laws of nature," except to assure him that "Heisenberg's principle of indeterminancy" does not mean that if the Sun on any day is high in the heavens, it is an indeterminate thing, whether the Sun will return to sink in the east region or will continue its course to sunset in the west.

I should like to give my thanks to Dr. Thirtle for his valuable addition to my paper, and especially for his insight into what I wanted to express, but had not the ability to express in any adequate fashion.

1 Isa. xxxviii, 8 (LXX version).
2 2 Sam. v, 9.
3 1 Kings ix, 15, 24; xi, 27.
4 2 Chron. xxxii, 5.
5 Antiq., XIII, vi, 7; B. J., V, iv, 1.
6 Isa. vii, 3.
7 2 Chron. xxxii, 3.
8 2 Chron. xxxii, 4.
9 Isa. xxxvi, 11.
10 2 Kings xi, 16; 2 Chron. xxiii, 15.
11 2 Kings xii, 20.
12 2 Kings xvi, 10-15.
13 2 Kings xvi, 18 (A. V.).
14 2 Kings xvi, 18 (LXX).
15 Hos. v, 13; x, 6.
16 2 Sam. vii, 19.
17 2 Sam. xxiv, 13; I Chron. xxi, 12
18 2 Chron. xxvi, 15.
19 2 Kings xvi, 18 (LXX).
20 Jer. li, 59.
21 2 Chron. xxviii, 21
22 Hos. x, 14.
23 2 Kings xvii, 3-5
24 Isa. xxxvi, 6.
25 2 Chron. xxxii, 31.
26 Camb. Anc. Hist. vol. iii, p. 46
27 Isa. xxxviii, 1.
28 Isa. xxxvi, 1.
29 2 Chron. xxvi, 22.
30 Isa. vi, 1.
31 Isa. xiv, 28.
32 Isa. xx, 1.
33 Ib.
34 Isa. xxxvi, 1.
35 Isa. xiv, 28.
36 Isa. vi, 1.
37 Isa. vii, 6.
38 Isa. x, 9-10.
39 Isa. xiv, 28.
40 Isa. xx, 1.
41 Isa. xix.
42 Isa. xxi.
43 Isa. xxxviii, 5.
44 2 Kings xviii, 2.
45 Isa. xxii, 9-11.
46 Isa. vii, 3.
47 2 Chron. xxxii, 5.
48 Isa. xxxviii, 1.
49 Isa. xxxviii, 5-6.
50 Isa. vii, 11.
51 Amos v, 8.
52 Heb. xi, 1.
53 2 Chron. v, 13 (LXX).
54 Isa. iv, 5.
55 Isa. vi, 1.
56 Hos. iv, 1-2.
57 Isa. x, 5.
58 Isa. xiii, 17.
59 Isa. xiv, 29, 31.
60 Isa. vii, 14.
61 2 Chron. xxviii, 3.
62 2 Kings xvi, 12-15.
63 Isa. vi, 1.
64. Hos. v, 13; vi, 2.
65 Matt. xii, 40.
66 Heb. ix, 27.
67 1 Cor. xv, 51

THE AMERICAN SCIENTIFIC AFFILIATION - THE FIRST DECADE

by
F. Alton Everest

Part of an address given at the Sixth Annual Convention
at
New York City, August 30, 1951

The ten-year period, 1941-1951, was a time of great significance to the world. During this time a second world war was fought which quite definitely silenced voices raised in optimistic hope for a peaceful world. International relations during this period were in a chaotic state. Sneak attacks, subversive activities, the lack of honor in international relations, the dishonest practices in high places within our own government, the deplorable flourishing of organized crime, juvenile delinquency--all these things have brought a feeling of insecurity and despair to our people and the people of the world.

In 1939, scarcely two years before the opening of this significant decade, there was announced the hypothesis of nuclear fission and its experimental verification. By the end of 1941 an extensive review of the whole uranium situation was completed and full impetus was given military exploitation of the fission effect. In 1942 the famous Manhattan District was organized culminating in that fateful birth of the atomic age in the gray dawn of the New Mexico desert on July 16, 1945.

These striking events in the military and political world had, perhaps, at least some effect on the changing attitudes in the scientific world. The pendulum seemed to be swinging away from the rigid materialism of the past. Heisenberg's Uncertainty Principle pointed out that strict determinism at least did not apply in the realm of the quanta. While the leap from so-called "free will" of the electron to the freedom of the human spirit is too great a jump for many to make, these new concepts were having their over-all impact on modern scientific thought.

The equivalence of mass and energy--a concept dramatically demonstrated on that morning in the New Mexico desert--also seemed to pull some of the underpinnings from beneath materialistic philosophies.

Let us not be confused--a knowledge that all our material world is but a manifestation of energy does not necessarily make a spiritual-minded religionist of the physicist. Nor should we feel that this revolution has taken place when we see cosmologists put forth their hypotheses of a practically instantaneous condensation of all the elements from a sort of hot cosmic stew and equate the event to the creation of Genesis 1:1. All these things may have their cumulative effect, but we still have to deal with scientists who, in the main, do not know our Redeemer, and yet who are somewhat more inclined toward a consideration of spiritual things. Today we find less inclination among scientists to brush off the claims of the Bible with a wave of the hand. This is illustrated by the Professor of Zoology of a large Western university who each year shows all of the Moody Science Films to his large class-gospel message and all--as he puts it, "to present the other side of the question in all fairness." Such instances may be few and far between, and the general trend away from rigid materialism may appear to be all but swallowed up in the familiar glorification of human wisdom, but it seems incontrovertible that the trend is there.

This is a brief sketch of conditions existing just prior to and immediately following the organization of the American Scientific Affiliation. There probably never was a more significant period in history--the growth of science and the opening of the atomic era--and a period that presents its own unique problems to an effective witness and defense of the faith.

It would be unfair and distinctly untrue to leave the impression that, in the midst of these great problems, the ASA was born in solitude. The ASA owes much to other similar organizations some of which rose briefly only to fade, others which are contemporarily functioning today.

The Victoria Institute of Great Britian was founded in 1865 to treat the problems arising between science and the Holy Scripture with the view of reconciling any apparent discrepancies. This organization has had a long and useful life and is actively continuing its work today. It has a total membership of around 600 and its Journal of the Transactions contains many valuable papers.

The Religion and Science Association was organized about 1928. Dr. L. Allen Higley, then of Wheaton College, was one of the founders. Other names associated in this early endeavor are Ben F. Allen, and Mr. Clarence Benson, and others. Its activities were abandoned at least ten years ago.

The Kelvin Institute had its origin in Toronto, Canada, about 1935. This group was founded by Mr. Arthur C. Custance, formerly a member of ASA. Our own Dr. John F. Howitt was one of the early members. At its peak it had some 50 members in England, Scotland,Australia, USA, and Canada and produced a number of very interesting papers. However, its activities ceased during the early 1940's.

The Evolution Protest Movement, active in England for more than two decades, did not find ready acceptance in the USA. Sensing this, Dr. Arthur Pierson Kelley thought that an indigenous group patterned along the same lines would be better received and proceeded to found the Creationist Society. This proved to be entirely abortive. For some time, however, Dr. Kelley issued a series of papers under the name The Landenberg Review which carried on the anti-evolution cause. As far as it is known, this effort has been abandoned.

In addition to these there have been a number of local organizations devoted to the study of the relation of science to Christianity. Typical of these was the Nature and Scripture Study Club of Grand Rapids founded in 1935 by Dr. John P. Van Haitsma of Calvin College, one of the founder-members of the ASA. This group disbanded prior to 1942, at least partially because of Dr. Van Haitsma's failing health.

About 1938, the Society For Study of Deluge Geology and Related Sciences was formed. This group published The Bulletin of Deluge Geology 1941 through 1945. To an outsider, what then happened is somewhat obscure, but apparently reorganization resulted in the use of the names Natural History Research Group and also The Society For the Study of Natural Science. A publication called The Forum came out with one or two issues under the latter-named society. Men associated with these groups include Prof. George McCready Price, well-known advocate of deluge geology, Dr. Cyril B. Courville, Dr. Moulerus Couperus, Mr. Ben F. Allen, and others. Correspondence with members of this group and a perusal of its publications leads one to conclude that it was founded principally to defend the so-called deluge interpretation of the earth's stratigraphic history and to contend for a

recent formation of the earth. As many of its leaders are also leaders in the Seventh Day Adventist group which strongly promulgates these particular interpretations, it is felt by many that the society, directly or indirectly, was influenced by the teachings of this denomination.

There are no doubt many other groups not named here that were formed during the 1930's and 1940's to correlate scriptural interpretation and new scientific facts. All these groups had one thing in common. They were anxious to demonstrate the harmony of God's Word and God's Work in nature. Some may have struck too negative a note, some may have been unwise in their emphasis, some may have been downright wrong in either their exegesis or their science--but their motives were commendable and we shall leave to the great Judge of all things the ultimate value of their labors.

I believe it was in the wise providence of our God that the men that founded the ASA and who were responsible for its nurture during the early years were relatively ignorant of these other groups. For this reason their influence on the ASA was negligible and it is only in retrospect that we can see how fortunate this was in the formation of the policy of the ASA which the testimony of ten years' growth indicates as sound.

What is this policy? For what purpose does the ASA exist? The constitution states that the object of the Affiliation is to "correlate the facts of science and the Holy Scriptures," We are vitally interested in determining the proper interpretation of the creation account, the flood of Noah, Joshua's long day, etc., but we consider it distinctly improper for the ASA to become so enamoured by particular interpretations of these accounts that we shift our efforts from study to propaganda. Dr. Allan A. MacRae, prominent archaeologist and past Vice-President and member of the Executive Council of the ASA has wisely put it this way:

> "To my mind it would be unfortunate for the Affiliation to go on record strongly in favor of any one of the various views. It seems to me that its purpose should be rather to show that the Bible as correctly and carefully interpreted, and without any twisting whatever, leaves room for every scientific fact at present known, and does not contradict any scientific fact as yet discovered, however much it may be at variance with some particular theory built upon these facts."

Now this does not mean that ASA members do not have some pretty strong personal convictions concerning these interpretations--they do. Furthermore, there is a wide range of interpretations held among the membership. This is only natural and it is a very healthful situation--one that causes one to search his case thoroughly before submitting himself to one of our justly famous discussion periods! Thus in <u>The Journal of the ASA</u> you will find a paper supporting a particular interpretation and a little later another one apparently demolishing it. We consider our job well done if we can present a Bible-teacher, a pastor, or a university student an adequate survey of the various views held on a given problem and the historical and scientific data pertaining to it. The problem of the church is principally one of plain ignorance of the many and complicated factors entering into a wise interpretation of the Scriptural accounts.

Another member of the ASA, Dr. Harley Barnes, a geologist, stated the following views six or seven years ago which I believe to be a fair expression of the prevailing attitude of the majority of the present Associates and Fellows of the ASA:

> "The essence of my attitude towards evolution and the Bible as a Christian geologist is that Christians should be non-evolutionary because the Bible does not give unequivocal grounds for being anti-evolutionary. Few, if any, Christians who are scientists now would say that the Flood of Noah produced all fossils or that the earth is only 6000 years old; yet there was a time when persons holding contrary opinions were generally labelled modernists. The Bible said the same thing then as now, but our interpretation has changed because discoveries have narrowed the field of interpretation possible to rational men of faith. We are faced then, with the realization that the Bible allows numerous interpretations of the creation account, but our choice of 'the' interpretation has been limited to those which do not conflict with accumulated scientific observations. The viewpoint of scientists changes continually as additional data fills in the picture, shifting the perspective. Let us not repeat the mistake of earlier Christians by forcing the Bible to speak in the language of current or recently current theory.
>
> "The devout "Fundamentalist' persecutors of Galileo and Copernicus helped discredit the Bible to many thinking persons because they were morally certain it specifically taught the Ptolemaic astronomy. After accumulated data overhelmed these pious but bigoted spirits, a new crop of second guessers came forth with the 'obvious fact' that the Bible had agreed with the former heretics (Galileo and Co.) right along, so that 15 years ago I was impressed by the quotation of verses 'proving' that the earth was round. And if science should find sufficient information that the earth after all really has the shape of a dodecahedron, someone would find a verse in the Bible which had said so all the time!
>
> "The Bible does not pretend to give a technical description of these matters. What it does say is accurate but generalized; some passages are figurative, but we are not always able to determine which ones--Isaiah 40:22 or Revelation 7:1. Let us not tie the Bible to any modern (or Victorian) scientific theory. If it can be interpreted more than one way, let us admit it and when all the pertinent facts are known rejoice in the Wisdom which had been revealed but until that time not understood. Perhaps the Bible suffers less from too little literal interpretation than from too much literal interpolation.

In November, 1940, while the writer was on the faculty of Oregon State College, a message was received from Irwin A. Moon who was holding his famed Sermons From Science demonstrations in nearby Salem, Oregon. A meeting was arranged in Salem during which Mr. Moon told of the great need he had encountered among young people for an organization of reputable men of science who were also Christians. The young people flocked to him with their questions, eager for reassurance that modern scientific knowledge does not rule out faith. That afternoon Mr. Moon named several qualified men of science whom he believed would be interested in forming such a society.

Several months passed during which Mr. Moon was in constant touch with Dr. Will H. Houghton, the late President of the Moody Bible Institute of Chicago, concerning ways and means of bringing this group into existence. Early in 1941 at

the request of Mr. Moon, the writer examined the constitutions of many existing scientific societies and drafted one which was considered suitable for such a society of Christian men of science as was proposed. Considerable attention was also given to a fitting name for the society.

In June, 1941, Dr. Houghton addressed a comprehensive letter to a number of men who had shown their interest in the formation of a group for the correlation of science and the Bible. In the recent biography of Dr. Houghton, A Watchman on the Wall,* Dr. Wilbur M. Smith entitled a chapter "Through Science to the Souls of Men" in which Dr. Houghton's letter is quoted in its entirety. Dr. Smith states that this letter might "be called the birth certificate of the American Scientific Affiliation." Dr. Smith further says "The letter itself, I think, will prove in days to come a significant document--." In this letter the men to whom it was addressed were invited to meet in Chicago September 2 to 5, 1941, to "canvass the possibilities of a larger conference" and eventually, perhaps, to organize a new society. Dr. Wilbur Smith writes, "Out of this letter has come a strong vigorous organization which today is undertaking a number of projects which, the Lord willing, in the days to come will be the means of great help to those who are troubled about the complicated relationships of contemporary science with the Word of God."

Five men journeyed to Chicago as a result of Dr. Houghton's invitation. Their expenses were borne by a donor unnamed at the time but who has since been identified as the saintly "Breakfast-Table Autocrat" and intimate friend of Dr. Houghton, Henry Parsons Crowell. Those who attended were:

Dr. Irving A. Cowperthwaite
Prof. Russell D. Sturgis
Prof. Peter W. Stoner
Prof. John P. Van Haitsma
Prof. F. Alton Everest

Dr. Houghton, Mr. Moon, and Mr. H. Coleman Crowell, the son of Henry P. Crowell and Vice-President of Moody Bible Institute, conferred with the group from time to time, but Dr. Houghton's statement in his letter of invitation was faithfully carried out when he said "Some of us are initiating this, but we haven't any desire to control it, and certainly it would be limited if it were known to be sponsored by any one educational institution--. We want you to be very sure the group will be entirely free to make its own plans."

The American Scientific Affiliation was organized at this time although its constitution and name were not officially adopted until a few months later. The precious time together was spent in considering future programs, membership qualifications and prospects, constitution, aims and purposes, spiritual standards, and many other vital topics. Dr. Cowperthwaite was elected Secretary-Treasurer and Prof. Everest Chairman and the group adjourned.

The next few months were filled with intensive correspondence and the laying of plans for a large national meeting in 1942. Three months after the Chicago meeting, on December 7, the Japanese attacked Pearl Harbor and such grandiose plans as a convention were eliminated by travel restrictions.

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* 1951, Wm. B. Eerdmans Publishing Company, Grand Rapids, Michigan

Looking back on it, the Lord's overruling hand in interfering with our plans by the war was probably the best thing that could have happened to the embryonic group. We were forced to work and study independently during the 1941-1945 period and were given practically no opportunity to arouse each other's ire in heated debate at close range. Rather, this time served to clarify the issues, streamline the organization, bring in new members and to begin work on the book later entitled, Modern Science and Christian Faith which is now in its second edition.

While war-time travel restrictions practically eliminated civilian travel, the chairman was not only able, but was forced to do considerable travelling over the United States in the interests of his wartime work. This provided opportunities for dozens of conferences and contacts which increased the effectiveness of the work greatly over complete reliance on correspondence.

Articles of incorporation for the ASA as a non-profit organization were filed with the Secretary of State of California in August, 1943. Also during 1943 we began voting in new members after cautious consideration of their qualifications. By the close of the war, the membership was about 50, and by the end of 1950 about 130. The adoption of the new constitution with the new membership classifications has naturally resulted in a sudden spurt over the average rate of approximately 20 new members per year. At the time of this 1951 convention in New York, the membership is about 220. The growth has been steady--we have never had ambitions for a large organization or we would have had lower standards for membership. After all, there are just so many scientists, and a very small percentage are interested in Christian things, but the conservative policies adopted are rapidly gaining the confidence of these qualified persons.

It seems entirely proper that the greatest strides of the ASA be taken during the tenth anniversary year. Without doubt, the adoption of the new constitution with no dissenting voices (one man expressed disagreement with one portion) was a remarkable expression of the members' confidence in the leadership of the Council. This is especially true when it is realized that, for those members not qualified for Fellow grade, it meant virtual disenfranchisement. This new constitution's distinguishing feature is its placing in the hands of the Fellows the voting privileges and the policy responsibilities, yet opening the Associate grade for those whose interest in and enthusiasm for the work of the ASA is in no way measured by their lack of advanced scientific degrees. Thus, maximum participation is coupled with maximum protection for the high spiritual and scholastic standards of the group.

Another great stride was Dr. Mixter's selection for the Presidency after nine years of service in this capacity by the writer. Sudden upsurge in all activities of the ASA is evidence cited to uphold this statement. One of the greatest experiences in the life of the writer has been the thrill of working side by side with men of the ASA--men whose faith has been tried in the crucible of spiritually sterile scientific criticism, men who have devoted their lives to the study of God's handiwork in nature and who see there the infinite resources of the One in Whom we live and move and have our being. It is our priceless privilege to join together in proclaiming the salvation which He has offered to a lost world.

STRUGGLE AND PROGRESS

by
William J. Tinkle

Seeking after progress has become one of the outstanding ideals of modern man. This was not true, however, in ancient or mediaeval times and there was general progress in very few of the centuries before the Industrial Revolution, beginning about the seventeenth century A. D. Thus among the fifty centuries of recorded history, we find steady progress in man's mastery over matter in only the last four centuries. Among peoples not of European descent we find but little progress even today, and many of them do not even consider it desirable, preferring to maintain the customs of their fathers.

Material progress in Western Europe during the early modern period was marked by competition among manufacturers and merchants and poverty of the laborers. But scholars pointed out that this struggle is to be expected, that the best will survive, and after a long period of time, progress will be apparent. This is a scientific law, they said, even among plants and animals, and in this way our improved species have arisen.

Now let us take a look at the ideal that preceded the ideal of progress based upon struggle. In mediaeval times, when all the Christians lived in Europe and all Europeans were supposed to be Christians, the emperor and pope were supposed to rule with a paternal attitude, applying the will of God to the people. Thus, order was to be maintained and strife eliminated, and the people should be content with the will of God for their lives. This was not always carried out but we have to admit that in a republic people do not always vote for the best man. There was need for improvement, however, for learning was very meager and the standard of living was low. And with all the discussion of theology, morals were no better than in modern times, according to Schaff's Church History.

This static mediaeval system was broken by two events coming close together: (1) the rediscovery of ancient Greek culture, and (2) the discovery of the New World by Columbus. With the huge new store of ideas, of raw materials, and potential markets, Christendom could not be the same again. The Industrial Revolution especially has given us our idea of progress, and it could not have reached great proportions without the natural resources from the New World.

Consequently, the result was a period of struggle: scholars relying upon investigation and reason and rejecting the dogmas of the church; people related by language and descent struggling to form a nation of their own; captains of industry harnessing the forces of nature and competing for distant markets. They were following the modern ideal of enlightened self interest; in other words, "Every man for himself and the Devil take the hindmost." The result is greater speed, which is considered a synonym for progress. But only a few men could own factories, while those who worked in them, largely women and children in those days, worked long hours in unhygienic conditions and for small pay. Thoughtful people hesitated to accept the new system.

Then came Thomas Malthus, who in 1798 wrote an "Essay on Population" in which he stated that poverty of the masses is to be expected. It is a law of nature that population increases faster than food. Even plants and animals produce more offspring than can become established, with the result that they struggle among themselves for the available food. He failed to see, however, that no distinction can be made between living things and food, since the food of an animal is either another animal, a plant, or a plant product.

Rather than the activities of plants and animals, Malthus described the unregulated and unrestrained competition among the people of Western Europe at the beginning of the Industrial Revolution. What he wrote about biological law was an after thought to justify his conclusions about human political economy. It is true that more young plants and animals are produced than can reach maturity but this is insurance against the extinction of species and a means of providing food for other species. It also is true that there is occasional struggle among animals but it is not incessant. Effort is primary, not struggle.

Charles Darwin in 1859 reiterated the statements of Malthus that there is prodigality of reproduction in nature, resulting in a struggle for existence, and added the doctrine that the plants and animals that survive are superior to the ones that succumb. According to Darwin, this superiority, while it may be slight, is germinal, and therefore is passed on to the next generation. After many generations of this natural selective process the improved characters are accumulated, so that a plant or animals is achieved that deserves to be called a new species. He even claimed that all existing species, including man, were formed thus from the primordial mass of protoplasm.

This is the Natural Selection theory of evolution, which is by far the most popular one. The others, such as Inheritance of Acquired Characters, Orthogenesis, and Creative Evolution, have not attracted so many followers. Apart from the lack of sufficient demonstration in nature, Darwin's chief mistake was his claim that the individuals which survive are germinally superior to the ones which perish. In most cases their hereditary factors are not different at all; with the result that it does not matter which individual plant or animal survives, the next generation will be the same. If the individual that survives is a mutant, it is germinally different from the others but it is not an improvement over the parental type.

According to Malthus and Darwin, struggle is a blessing. To be sure it is very costly and we must have endless patience to appreciate the result but in the end it gives us improved types. Then if we only had sufficient courage to increase the vicissitudes of life we should increase the speed of man's evolution. Malthus advocated that there should be no laws to regulate factory work but modern nations long since have disagreed with him on that point, seeing that natural laws do not regulate sufficiently. In addition, we are coming to appreciate the fact that cooperation in business can do what competition can not do. The Industrial Revolution has led to material progress, but this is due to the exploitation of natural resources, which in time must fail because of the limited supply. If improvement through struggle were a basic law its functioning would be eternal; rather, it has given material progress because of the combination of circumstances mentioned above. Struggle does not necessarily lead to progress.

In biology we have learned that natural selection does not initiate new and improved species but eliminates the individuals which are infirm, sick, aged, or crippled, along with the ones that merely happen to be crowded out, so that a lower limit is maintained. If these defective organisms reproduced and the offspring were like them, the average of the species would retrograde; but what actually takes place is that natural selection keeps the average of the generations uniform. The improved breeds and varieties of modern times have been developed by man of special ability and experience. There was struggle at times, as for instance against insect enemies, but intelligent care was needed incessantly. This care is somewhat of the nature of that mentioned in Genesis 1:2; "The Spirit of God moved (brooded) upon the face of the waters."

In the Bible we are commanded to struggle against Satan and his hosts. "Resist the devil and he will flee from you." James 4:7. The result of this struggle is not to be an improved race of people but the approval of God.

We are commanded not to fight against men, not even evil ones. "For we wrestle not against flesh and blood, but against principalities, against powers, against the rulers of the darkness of this world, against spiritual wickedness in high places." Ephesians 6:12. "But I say unto you, that ye resist not evil; but whosoever shall smite thee on thy right cheek, turn to him the other also." Matthew 5:39. "Dearly beloved, avenge not yourselves, but rather give place unto wrath: for it is written, Vengeance is mind; I will repay, saith the Lord." Romans 12:19. Our dealings with other men should be guided by love, realizing that since men are made in the image of God they are capable of repenting of evil that may be in their hearts. If our good treatment does not bring them to repentance, then God will mete out the punishment.

SUMMARY

The idea that struggle leads naturally to progress arose in modern time in Europe and has endured but a short time as compared with the history of the human race. It has given man a remarkable mastery of energy and matter, making material goods abundant for some people but not for all. The theory of Evolution by Natural Selection started as a scientific justification of struggle. Since it is not in accord with the Bible or other older literature but is an outgrowth of the Era of Political and Industrial Revolution, the theory of Evolution by Natural Selection will pass away with that era.