



Journal of The Brotherhood of Man Library, an Information, Telecommunication and Lending Service Resource for Students of *The URANTIA Book*.



## On Prayer and Faith

“Jesus brought to God, as a man of the realm, the greatest of all offerings: the consecration and dedication of his own will to the majestic service of doing the divine will. Jesus always and consistently interpreted religion wholly in terms of the Father’s will. When you study the career of the Master, as concerns prayer or any other feature of the religious life, look not so much for what he taught as for what he did. Jesus never prayed as a religious duty. To him

prayer was a sincere expression of spiritual attitude, a declaration of soul loyalty, a recital of personal devotion, an expression of thanksgiving, an

avoidance of emotional tension, a prevention of conflict, an exaltation of intellection, an ennoblement of desire, a vindication of moral decision, an enrichment of thought, an invigoration of higher inclinations, a consecration of impulse, a clarification of viewpoint, a declaration of faith, a transcendental surrender of will, a sublime assertion of confidence, a revelation of courage, the proclamation of discovery, a confession of supreme devotion, the validation of consecration, a technique for the adjustment of difficulties, and the mighty mobilization of the combined soul powers to withstand all human tendencies toward selfishness, evil, and sin. He lived just such a life of prayerful consecration to the doing

of his Father's will and ended his life triumphantly with just such a prayer. The secret of his unparalleled

religious life was this consciousness of the presence of God; and he attained it by intelligent prayer and

**Jesus' attitude to prayer.**

**Jesus' secret for attaining the presence of God.**

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sincere worship—**unbroken communion with God**—and not by leadings, voices, visions, or extraordinary religious practices.

“In the earthly life of Jesus, religion was a living experience, a direct and personal movement from spiritual reverence to practical righteousness. The faith of Jesus bore the transcendent fruits of the divine spirit. His faith was

**Jesus trusted God as a child trusts a parent.**

not immature and credulous like that of a child, but in many ways it did resemble the unsuspecting trust of the child mind. Jesus trusted God much as the child trusts a parent. He had a profound confidence in the

universe—just such a trust as the child has in its parental environment. Jesus' wholehearted faith in the fundamental goodness of the universe very much

**The real universe is friendly to every child of the eternal God. (1477)**

resembled the child's trust in the security of its earthly surroundings. He depended on the heavenly Father as a child leans upon its earthly parent, and his fervent faith never for one moment doubted the certainty of the heavenly Father's overcare. He was not disturbed seriously by fears, doubts, and skepticism. Unbelief did not inhibit the free and original expression of his life. He combined the stalwart and intelligent courage of a full-grown man with the sincere and trusting optimism of a believing child. His faith grew to such heights of trust that it was devoid of fear.

"The faith of Jesus attained the purity of a child's trust. His faith was so absolute and undoubting that it responded to the charm of the contact of fellow beings

**In matters of religious consciousness, the faith of the child reigned supreme.**

and to the wonders of the universe. His sense of dependence on the divine was so complete and so confident that it yielded the joy and the assurance of absolute personal security. There was no hesitating pretense in his religious experience. In this giant intellect of the full-grown man the faith of the child reigned supreme in all matters relating to the religious consciousness. It is not strange that he once said, 'Except you become as a little child, you shall not enter the kingdom.' Notwithstanding that Jesus' faith was childlike, it was

**We are required to believe not in but with him**

in no sense childish. Jesus does not require his disciples to believe in him but rather to believe with him, believe in the

*Mechanical inventions and the dissemination of knowledge are modifying civilization; certain economic adjustments and social changes are imperative if cultural disaster is to be avoided. This new and oncoming social order will not settle down complacently for a millennium. The human race must become reconciled to a procession of changes... Mankind is on the march toward a new and unrevealed planetary destiny. (1087)*

*God grant me  
the serenity  
to accept the things  
I cannot change;  
the courage to  
change the things  
I can, and the  
wisdom to know  
the difference*

Reinhold Neibuhr

reality of the love of God and in full confidence accept the security of the assurance of sonship with the heavenly Father.

**"Follow me"**

The Master desires that all his followers should fully share his transcendent faith. Jesus most touchingly challenged his followers, not only to believe what he believed, but also to believe as he believed. This is the full significance of his one supreme requirement, 'Follow me.'"

## **The Challenge of the Twenty-first Century**

Meredith Sprunger, Fort Wayne, In., USA

We are living in one of the major turning points of history. Our times have been labeled variously as the post-industrial, post-modern, and post-Christian era. The traditional paradigms of cosmology, value, and reality have lost their unquestioned relevance and authority among contemporary people. The social institutions which were structured by these traditional concepts and values are deteriorating in vitality and influence. The economic and political infrastructures of society are breaking down and losing their credibility and effectiveness. The mores that have been the foundation of human behavior and ethical standards in society are crumbling and immorality, crime, and violence are endemic. Religious institutions that were once the central pillars of society are now relegated to a peripheral position.

As we face the twenty-first century there are numerous scientific-technical innovations which will revolutionize the way we live. Computers and computer technology are changing the way we are handling information and communication.

Microbiology is opening a vast potential for altering living organisms. Recombinant DNA technology makes it possible to restructure both plants and animals and produce a variety of drugs, industrial lubricants, enzymes, etc. Human applications will range from predicting inherited genetic diseases to applying gene therapy for correcting genetic disorders. The new physics is radically changing our conception of the nature of material reality. We are, literally, being ushered into a new world of potential development.

Among the many problems that we face, the material-environmental, economic, and political difficulties are much easier to cope with than the personal-spiritual and social-cultural problems. Our industrial-technological civilization has broken up the small communities which were indigenous to the agricultural society and has isolated the individual

**Materialism has proved to be incompatible with idealistic community, family, and spiritual values**

within the boundaries of specialization and urbanization. The advent of the computer has accelerated this separation and seclusion. The sense of

both community and the extended family are greatly diminished. Even the segregated industrial-business groups and the nuclear family exist in relative cultural isolation. This detachment and isolation contributes to the deterioration of family and community influence. The inherent human hunger for community and belonging causes young people to join gangs with territorial-defensive agendas and motivates adults to affiliate with ideological and religious groups with exclusive-restrictive boundaries.

*Religion must not become organically involved in the secular work of social reconstruction and economic reorganization. But it must actively keep pace with all these advances in civilization by making clear-cut and vigorous restatements of its moral mandates and spiritual precepts, its progressive philosophy of human living and transcendent survival. The spirit of religion is eternal, but the form of its expression must be restated every time the dictionary of human language is revised. (1087)*

*Urantia society can never hope to settle down as in past ages. The social ship has steamed out of the sheltered bays of established tradition and has begun its cruise upon the high seas of evolutionary destiny; and the soul of man, as never before in the world's history, needs carefully to scrutinize its charts of morality and painstakingly to observe the compass of religious guidance. The paramount mission of religion as a social influence is to stabilize the ideals of mankind during these dangerous times of transition from one phase of civilization to another, from one level of culture to another. (1086)*

The root of the breakdown in individual behavior, the deterioration and malaise of our social institutions, and the failure of our religious institutions to satisfy our spiritual hunger and inspire our creativity, is that our civilization is trying to draw resources and energy from a horse and buggy paradigm of reality which has lost its relevance and serviceability. There are diverse and confused views of reality in today's world. Many scientifically oriented people have a materialistic-positivistic understanding of life. Most religionists have a simplistic view of spiritual cosmology that does not harmonize with our astronomical view of the cosmos, and a great portion of society is confused about what to believe. The basic dilemma of our times is that we have no unifying conception of reality.

**Our basic dilemma—no unifying conception of reality**

The singular ingredient which will bring meaning and unity into planetary existence is an inspiring paradigm of reality which will harmonize science, philosophy, and religion, and inspire humankind to strive for common goals and objectives. Only a new and enlarged revelatory vision of reality has the potential of doing this. Hopefully, the seekers and searchers of our world will discover the Fifth Epochal Revelation in the twenty-first century. *The Urantia Book* is the only source of reality that is large enough and spiritually empowering enough to unify and energize the planet. Enculturating the world with the inspiring and ennobling teachings of the Fifth Epochal Revelation is the challenge of the twenty-first century!

**The remedy—the unifying cosmology of the Fifth Epochal Revelation.**

# The Scandal of Current Spiritual Cosmology

Meredith Sprunger, Fort Wayne, IN. USA

The material cosmology of the prescientific Biblical world was a simplistic view of a flat earth overarched by a firmament that had holes (stars) through which the light of heaven shone forth. Our current four dimensional scientific material cosmology in which distances are measured in light years indicates how out-of-date Biblical astronomy is. Even religious fundamentalists today have abandoned a flat earth material cosmology.

What is amazing is that progressive, liberal theologians of the twentieth century have done very little to expand an

**Modern spiritual cosmology remains at the intellectual level of a flat earth material cosmology**

equally simplistic spiritual cosmology. Current orthodox spiritual cosmology consists only of the

Trinity and possibly a few vaguely defined angels. Astrophysicists are continually speculating about material cosmological possibilities. In a November, 1994 *Scientific American* article entitled, "The Self-Reproducing Inflationary Universe," Andrei Linde observes, "If my colleagues and I are right, we may soon be saying good-bye to the idea that our universe was a single fireball created in a big bang." He comments about how this new theory would make a "fundamental change in how the cosmos is seen." We see no creative imagination at work among contemporary theologians regarding a spiritual cosmology or eschatology in general. Deductive theological reasoning would project a spiritual cosmology at least as extensive and complex as our material cosmology. It is not surprising that many of our young people living in the context of our impressive contemporary material cosmology are not

*The meaning of life  
is the joy of life;  
the purpose of human life  
is to depart this earthly sojourn  
content in the knowledge  
that we have sought to abide by the  
Father's will in all things.*

A Urantia Book reader

inspired by our antiquated spiritual cosmology.

**In the absence of a meaningful and purposive spiritual cosmology, human life may appear to be absurd, even bordering upon the obscene.**

Here, as in so many

other areas of spiritual enlightenment, *The Urantia Book* presents an expanded view of spiritual reality. The spiritual cosmology of the Fifth Epochal Revelation eclipses even the gigantic material cosmology of contemporary astronomy. As knowledge of the infinite spiritual cosmology of *The Urantia Book* infiltrates our world, it will bring new meaning and purpose to all of life. Young people will once more be thrilled by the challenge of spiritual growth and achievement, while those in advanced years will be inspired by the

**The Fifth Epochal Revelation provides a spiritual cosmology that adds meaning and purpose to human life.**

potentials of adventure beyond the grave.

[Dr. Sprunger is a retired college professor and a minister of the United Church of Christ.]

## Here and There

A short story by Q. P. Quid

Once, in a moderately large city, there lived a man gifted with many gifts including an imposing presence, a talent for oratory, and a charismatic personality tempered by a not insignificant touch of egotism. After giving his life to God at a rousing and inspiring renewal crusade, this man dedicated his many talents to the Almighty, and set about using them to raise the funds for a wonderfully spacious and sublimely decorated temple to be erected as close as possible to the very heart of his city where all might come to hear his oratory and to join in worship of the Almighty with resounding and inspiring songs of praise.

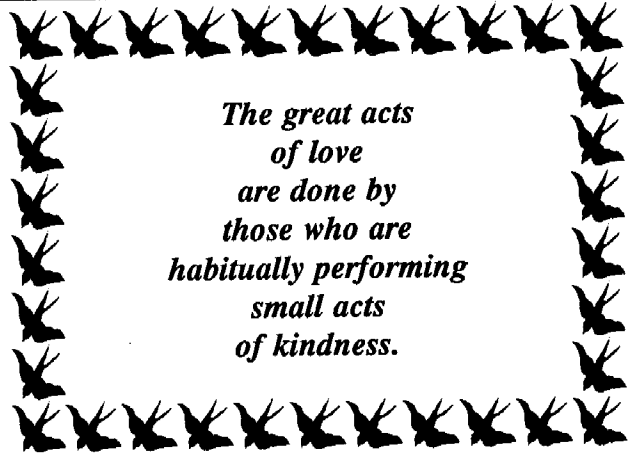
*The meaning  
and the purpose  
of life  
is to resist death.*

A Skeptic

Such were the talents of this imposing man that his appointed task was quickly achieved. Very soon, crowds of visitors were flocking to this sparkling and spectacular temple to hear this self-nominated messenger from the Almighty and have their minds and souls uplifted to a peak of religious fervor. But for most of the visitors, the peak of their fervor was very temporary, quickly diminishing and bearing little or no fruit. However, the spectacle of the temple and the advertising of its services of worship were such that always there was a fresh stream of visitors, seeking to find they knew not what—but nevertheless filling them with the high expectations that what they sought must be of tremendous spiritual value in order to match the beauties of the temple and the advertising hype of its operators.

At the other end of this same city there lived an unassuming and humble man, favored with a keen sense of observation and a talent for listening. Gradually this man grew a feeling of being indwelt by some great interior force which he called "Him inside of me." As he intensified his relationship with "Him," he became convinced that his own ignominious self was, at some far-distant future time, to become "One with Him." Day by day he wove new areas inside of himself which he felt were becoming part of "Him's" new home. Little by little and piece by piece his self became more and more at one with the "Him inside of me."

All this took place simultaneously with the continual hubbub that was going on at the great and glorious temple at the heart of the city. And almost unnoticed, but slowly and surely, the daily life of this simple, humble man filled with divine love and joyful and abundant service—and seemed to envelop all who came in contact with him with the fragrance and flavor of divine joy that lingered with them and in them. And many there were who, through this contact, were led



*The great acts  
of love  
are done by  
those who are  
habitually performing  
small acts  
of kindness.*

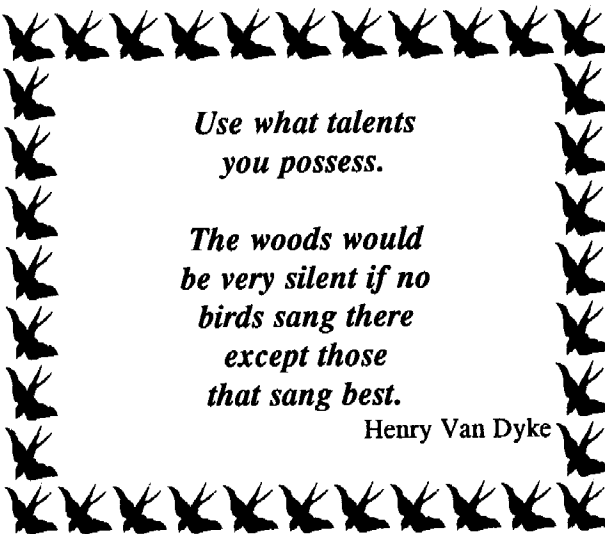
to listen to the small, powerful, silent voice that lingers inside themselves also. And the yield of the fruits of the spirit in this part of the city was indeed great.

## **Science and Archaeology in The Urantia Book**

Ken Glasziou, Maleny, Australia

Recently I've been occupied in revising part of a publication entitled "The Science Content of *The Urantia Book*" by R. Bain, M. Neibaur, F. Wright & myself. Draft copies of the revision text were sent to a number of Urantia Book readers for comment, and the question was posed as to whether observations upon the wealth of archaeological information contained in Part 4 of the Papers should be included. In part, the reason for the inclusion was the Martin Gardner hypothesis that Dr Sadler and associates were the real authors of the Urantia Papers.

Part 4 of *The Urantia Book* contains literally hundreds of historical and archaeological references that can be checked against past and current research. This material, as presented in the Papers, could only result from the intensive and scholarly research of experts in the appropriate fields of study. Some readers have already recognized that this is so and have contributed valuable work. Should this work be intensified? There follows a reply received from Matthew Block that, because of its visionary nature, I felt needed to be brought to the attention of other readers. Also included in this issue of Innerface is a recent study by Stephen Finlan on the biblical and archaeological evidence for the existence of two towns in first century Palestine bearing the name Bethsaida, that should make readers aware of why archaeological and historical research will have an important bearing on the future general acceptance of the Fifth Epochal Revelation. Quotations relevant to the two Bethsaidas from Part 4 of the Papers are included for



*Use what talents  
you possess.*

*The woods would  
be very silent if no  
birds sang there  
except those  
that sang best.*

Henry Van Dyke

the convenience of our readers.

## **Letter from Matthew Block on Science and Archaeology in the Urantia Papers.**

"Let me weigh in with the opinion that archaeological studies should be included with the new booklet. Sure it deals with minutiae, but it is not trivial and there must be room in the movement for microanalytic research (it's not surprising that I should be saying this!). Your booklet should be published as you originally envisaged it—an investigation of a broad range of topics treated in appropriately different ways.

"We are still in the early stages of (Urantia Book) science research. My work on the human sources for the Papers will fill an important gap. But that is not enough. Our goals should be:

- to track down all the direct and indirect human sources of the science material.
- to become thoroughly familiar with the history of the science of the 20th century, decade by decade.

"Ultimately, then, we will be able to classify the science statements in a four-item typology embracing:

- statements that reflect mid-30's science and are still supported by contemporary science.
- statements that reflect mid-30's science that are no longer held (charting when and why science discarded the theories in question).
- statements that were not held by the mid-30's science but are held today (i.e. prophetic or "about-to-be-known" facts (1109) and observations.
- statements that were not supported by mid-30's science and are still not considered tenable.

"We will also be able to tag every science-related sentence and/or paragraph and/or section in the book according to whether it:

- is direct superhuman information or commentary, unmediated by humanly derived references.
- is directly based on specific human source materials.
- is an assemblage of humanly known information probably culled and distilled from a variety of unspecified sources.
- is a composite of revealed and unrevealed information.

"I agree that the "mixed bag" nature of the book's science ("about-to-be-known" facts interspersed with obsolete statements and with surprisingly unconventional assertions) is somewhat baffling. But actually, it won't be as baffling once the Papers are subjected to a thorough comparative analysis with human sources. Patterns will probably emerge (actually are already emerging), shedding light on the intentions of the Revelators.

"For instance a recurrent motif in the first five papers of Part 111 is sudden speciation. The Revelators are so intent on emphasizing this that they expressly gloss over (ignore) contraindications of transition species cited by Chamberlin and Schuchert. As a case in point, both Chamberlin and Schuchert maintain that placental mammals derived from insectivorous non-placental mammals, and were already in evidence in the late Mesozoic. But the Revelators say no such thing, stating rather that the placentals sprang directly from an earlier line of mammal-like reptiles, emerging only at the beginning of the Cenozoic. Why the divergence? I don't know exactly...but it does tie in with the Revelators' previous statements about the life-modification experiment involving mammals. The mammals, especially the placental ones, had an unusual emergence on this planet, somehow tied in with the purposeful plans (and failed experiments) of the Life Carriers. So the Revelators' surprising statement about the emergence of the placental mammals is not so wild and unaccountable after all.

"Martin Gardner's jaundiced and harsh review of the book's science has given us an indication of what to expect from the skeptics. We'll never be able to sell agnostic scientists on the book by the science alone. (I realize that's never been your hope.) ...What we can hope to expect is that the science of the book will be respected by scientists as an important element in the whole revelatory presentation, which is primarily an attempt to portray a *synthesis* of science, religion, and philosophy. One must already appreciate the philosophic excellence and spiritual beauty of the Papers to give the science its proper due. Papers 41-42 and 57-61 (as well as some other science-related ones), for all their errors and obsolete information, are still beautifully written and conceived. I'm so impressed by how the Revelators distil hundreds of pages from geological textbooks into 50 scintillating pages, interweaving humanly derived observations with revelatory insights, and showing the glory of the evolutionary process in a cosmic, transplanetary context. There's really nothing like these papers in the human literature. Nevertheless, they definitely contain some little mistakes and outdated information."

## Bethsaida and *The Urantia Book*

We *Urantia Book* readers are only just beginning to realise that Part 4 of the book is not only an archaeological treasure-house but that it is also a means of comparing what we find written in the book with the results of modern scholastic research, both biblical and archaeological.

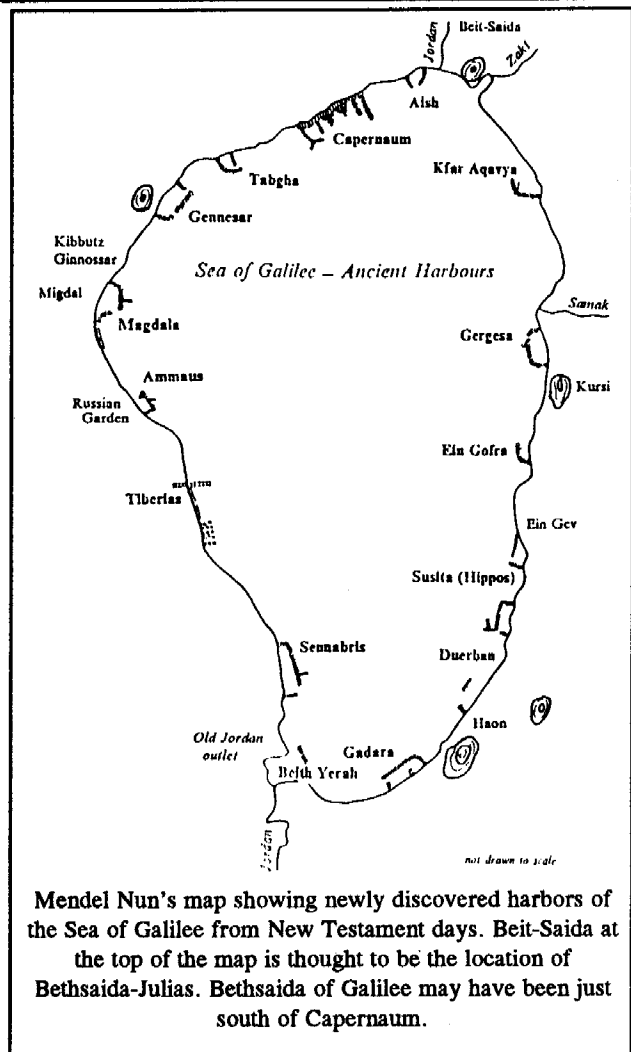
The article that follows brings together a large volume of research on a long-standing problem: in New Testament times, were there two—or only one—town named Bethsaida in the neighborhood of the Sea of Galilee? Much of this research is the product of scholastic work carried out subsequent to the first printing of *The Urantia Book*, but takes no account of what is to be found in that book. Therefore it provides readers with an opportunity to do their own comparative research in order to discover the degree of convergence between the results of recent academic scholarship and what has already been stated in *The Urantia Book*.

The one or two Bethsaidas problem is heavily involved with incidents occurring during and subsequent to the miracle of the loaves and fishes (the feeding of the five thousand)—where this miracle occurred and where the apostles went afterwards. *The Urantia Book* supplies its own explanations for some of these questions. For convenience sake, a short listing follows of relevant material from the *Urantia Book* text from Part 4.

*The Urantia Book* refers to two towns having the name Bethsaida, one simply Bethsaida, the other Bethsaida-Julias. The following quotes provide information both on the location of the Bethsaidas, and the domiciles and relationships of some of the apostles:

*He (Jesus) spent one week at Tiberias, the new city which was soon to succeed Sepphoris as the capital of Galilee; and finding little to interest him, he passed on successively through Magdala and Bethsaida to Capernaum, where he stopped to pay a visit to his father's friend Zebedee. (1419)*

*Andrew, chairman of the apostolic corps of the kingdom, was born in Capernaum. He was the oldest child in a family of five—himself, his brother Simon, and three sisters. His father, now dead, had been a partner of Zebedee in the fish-drying business at Bethsaida, the fishing harbor*



Mendel Nun's map showing newly discovered harbors of the Sea of Galilee from New Testament days. Beit-Saida at the top of the map is thought to be the location of Bethsaida-Julias. Bethsaida of Galilee may have been just south of Capernaum.

*of Capernaum. (1548)*

*When Simon joined the apostles, he was thirty years of age. He was married, had three children, and lived at Bethsaida, near Capernaum. His brother, Andrew, and his wife's mother lived with him. Both Peter and Andrew were fisher partners of the sons of Zebedee. (1550)*

*James, the older of the two apostle sons of Zebedee... lived near his parents in the outskirts of Capernaum, Bethsaida. (1552)*

*John (Zebedee)... lived with his parents at Bethsaida; he was a fisherman and worked with his brother James in partnership with Andrew and Peter. (1553)*

These quotes leave no doubt about this Bethsaida being the "fisher town" of Capernaum. The apostle Philip was also from this Bethsaida: "He was often spoken of as 'Philip of Bethsaida, the town where Andrew and Peter live.'"

Following the cure of Amos, the Kheresa lunatic, Jesus and the apostles returned by boat from the east shore of the Sea of Galilee to Bethsaida. (1698) There followed the cure of Jairus' daughter at Capernaum (1699) and the inevitable gathering of crowds clamoring for miracles. The book tells us:

*The Master had so little rest over the Sabbath that... he sought to get away from the people. Some of the evangelists were left to talk to the multitude while Jesus and the twelve planned to escape, unnoticed, to the opposite shore of the lake, where they proposed to obtain much needed rest in a beautiful park south of Bethsaida-Julias. The region was a favorite resorting place for Capernaum folks; they were all familiar with these parks on the eastern shore. (1700)*

To get our perspective right we need to be aware that the Sea of Galilee was quite small, about 13 miles long and 7 to 8 miles wide. Escape from the crowds was impossible. The book continues:

*But the people would not have it so. They saw the direction taken by Jesus' boat, and hiring every craft available, they started out in pursuit. Those who could not obtain boats fared forth on foot to walk around the upper end of the lake... By Wednesday noon about five thousand men, women, and children were assembled here in this park to the south of Bethsaida-Julias. (1700)*

There followed the incidents of the loaves and fishes and the attempt by the crowds to crown Jesus as their king—and Jesus' refusal. The book tells us:

*These words of Jesus sent the multitude away stunned and disheartened.... The apostles were speechless... Jesus, before going off to be alone in the hills, turned to Andrew and said: "Take your brethren back to Zebedee's house and pray with them, especially for your brother, Simon Peter."*

*The apostles, without their Master—sent off by themselves—entered the boat and in silence began to row toward Bethsaida on the western shore... Hardly a word was spoken; they were all thinking of the Master alone in the hills. Had he forsaken them? He had never before sent them all away and refused to go with them. What could all this mean? (1702/3)*

A storm came up while the apostles were on their way back to Bethsaida that prevented them reaching their destination before darkness closed in. As a result they anchored their boat offshore "near Zebedee's

house," and slept through until noontime the following day. (1703) This may account for some of the apparent confusion generated by the Gospel accounts that have them going to both Gennesaret and Bethsaida (see following article). *The Urantia Book* says that shortly after midnight, Jesus, in company with Mark lad, walked "around the lake and across the river, back to Bethsaida" arriving there in time to meet Andrew who was first to awaken and come ashore. (1703)

Our readers are now left to their own devices to correlate the results of modern archaeological and Biblical research with *The Urantia Book* account of these events.

## **Bethsaida-Julias and Bethsaida of Galilee**

Stephen Finlan, USA

The location of Biblical Bethsaida has been a vexed problem of Biblical scholarship for almost two hundred years, and a problem in the history of Christian pilgrimage since at least the sixth century.

I will consider the literary-historical evidence from Josephus, from the four Gospels, and from pilgrimage accounts, weaving in the archaeological and geographic evidence from the western and northern sides of the Sea of Galilee. There are a number of reasons for approaching the problem in that order. The first century literary evidence is our best information for any attempted identification of any site or sites with the names Bethsaida and/or Julias. The very process of *identification* of ancient sites implies a correlation of literature with archaeology.

Some archaeologists claim that they are no longer guided in their work by ancient texts, yet their arguments for the *significance* of each site in its time and place begins and ends with facts gained from literature. Solicitation of public support for their enterprises continues to focus on identification of sites with place names found in the literature, particularly the Bible. The subtext underlying these protestations of absolute objectivity is the notion that physical science is "objective," while Biblical scholars are "subjective" and unreliable. But pottery is no more physical than Biblical manuscripts, and archaeologists are no less subjective than Biblical scholars. All interpretations must be subject to scrutiny.

### **Non-Biblical First Century Evidence**

"The identification of Julias with Bethsaida, which Josephus makes in *Ant. 18.2.1* §28 is the only reference to it in the whole of ancient literature."<sup>1</sup> Aside from that passage, Josephus speaks only of "Julias" (while the



Gospels speak only of "Bethsaida"). "Pliny the Elder (*Hist. nat. 5.15.71*)... mentions four 'lovely cities' on the Sea of Galilee in his work, which appeared in the second half of the first century CE, among them 'in the east' Julias and Hippos." (Kuhn and Arav, 82)

The Josephus evidence is critical. His Julias "lay in the Gaulanitis east of the Jordan, near its entrance to the Lake."<sup>2</sup> But it was not right on the sea, there was a marshy plain between Julias and the sea.<sup>3</sup> Kuhn<sup>4</sup> effectively argues that this points decisively to et-Tell and rules out the sites of el-Araj and el-Mesadiyeh, which lie in that plain (Kuhn and Arav, 81). From Arav's digging at el-Araj, "no evidence [was] found for Roman or Hellenistic occupation...a sterile level was found underneath this Byzantine structure" (94).

El-Tell shows occupation in the 10th century BCE, as well as the Roman period. These coincide fairly well with the periods mentioned for Tzer (Joshua 19:35) and Bethsaida in the Bible. These details lie beyond the scope of this article.

I accept the identification of et-Tell with Julias, and with the Bethsaida of Josephus. I do not accept that all New Testament references to Bethsaida refer to this site.

### Biblical Evidence

Bethsaida is mentioned seven times in the New Testament. The story of a blind man being healed there (Mark 8:22) gives no definite geographic clues. The curse against Bethsaida (Mt 11:21; Lk 10:13) will be examined later in this article. This leaves us with two useful references in John, and two difficult but crucial references connected with the feeding miracle.

The feeding of the five thousand is the only miracle found in all four Gospels. There is a significant convergence among the accounts, and some even more significant divergences.

The most inescapable divergence among the Gospel accounts is that Luke 9:10 says the miracle took place in a "city called Bethsaida" (NRSV), or in "a deserted place belonging to the city called Bethsaida" (NKJV)<sup>5</sup>, while Mark 6:45 says *after* the miracle, "immediately he made his disciples get into the boat and go on ahead to the other side, to Bethsaida, while he dismissed the crowd" (NRSV).

At first glance, we appear to have a contradiction between Mark and Luke. But if we set aside "Bethsaida" as an uncertain factor for the moment, and examine the Biblical record in light of agreed-upon sites, we find there is substantial agreement between three of the accounts, while Luke gives us political information that seems to correlate with the geography of the other three. It is much better to examine the Biblical evidence carefully, than to hastily pronounce it to be in error.

Mark has the disciples leaving the miracle site and sailing across the sea toward Bethsaida, but actually landing at Gennesaret (Mark 6:53), possibly blown off course by

the strong winds (6:48,51). Matthew does not mention Bethsaida but concurs in their landing at Gennesaret (14:34). Kopp<sup>6</sup> argues convincingly for Tell el-Minyeh as Gennesaret (or, more anciently, Kinnereth; more recently, Ginosar), located on the west shore, a few miles south of Capernaum, a few miles north of Tiberias.

John mentions neither Bethsaida nor Gennesaret in connection with the feeding or the sailing afterwards, but he concurs in the general location of the miracle-site: somewhere *across*<sup>7</sup> the sea from these west-coast towns. The west-coast town he refers to is Capernaum. They sail away from the miracle site "toward Capernaum" (6:17), and reach their destination (6:21), which, again, from 6:24, appears to be Capernaum. John reiterates that the feeding was across from the lake from Capernaum (6:24-25).

Kuhn makes a muddle of the Biblical text. In dealing with Mark, he writes, "In 6:45 the original goal of the journey in the direction of Bethsaida (in the Gaulanitis) could be traditional, since in 6:52 the evangelist puts the boat not around Bethsaida but rather at the site or in the area of Gennesaret in Galilee" (Kuhn and Arav, 78). This sentence gives the impression that 6:45 refers to the journey *to* the feeding-site, when it actually places it *after* the feeding. Kuhn uses some very peculiar reasoning: the fact that Luke omits the interval between Mark 6:45 and 8:22—the only two verses where Mark mentions Bethsaida—"proves that Luke was aware of the section Mark 6:45—8:26" (79, footnote 4).

Kuhn awkwardly paints over the problem attributing the awkwardness to Luke "Not adhering to Markan tradition, Luke somewhat awkwardly transfers the feeding site of the five thousand in 9:10 to Bethsaida" (Kuhn and Arav, 78). Yet, this should strengthen Kuhn's case, since the other three Gospels assert that the feeding took place somewhere *other* than the west shore of the sea. Kuhn has evidently failed to see the geographic convergence of Mark, Matthew, and John.

### Luke's Evidence

The locations of Gennesaret and Capernaum (west shore) are virtually undisputed. Three of the Gospels make it clear that the feeding took place across from these towns. Luke's geographical clues here are weak, but his political and *situational* clues are highly suggestive. After a pericope that takes place in Capernaum, he tells us that "Jesus went aside privately into a deserted place belonging to the city called Bethsaida" (9:10). By itself, this tells us nothing about Bethsaida's location. But Luke had just told us that Herod had become "perplexed" (9:7) with Jesus: it was being worded that he was a prophet, maybe even John (the Baptist) returned from the dead. Immediately after telling us of Herod's sudden interest in Jesus, we are told of Jesus' withdrawal to the Bethsaida region. Bethsaida-Julias was just outside Herod Antipas' territory, in the domain of his brother Philip Herod, who never showed any hostility to Jesus. Withdrawal into Gaulanitis may have been necessary to avoid arrest or other hostile attention from Herod

Antipas. "It seemed advisable therefore to take refuge... in the tetrarchy of his tolerant brother, Herod Philip."<sup>8</sup>

We must admit that this is unproved; as evidence for the feeding taking place to the east of the Jordan, it requires *surmise*, and surmise can be faulty. Luke is the only one who does not *clearly* state that the feeding was east of the Jordan, yet he gives us the strongest reason for a withdrawal to the east side.

Still, if we use our evidence conservatively, we must state that Luke is vague about which side of the lake the feeding took place on, although definite about the *name* of the nearest town. The other three evangelists are noncommittal about the *name* of the feeding-site, but are definite about its being *across* from the west shore.

On balance, we are left with the distinct possibility that there is no fundamental disagreement among the evangelists about any point except *which* village or city is meant by "Bethsaida." If Luke's Bethsaida is Julias in Gaulanitis, and the Bethsaida of the others is a fishing-village "of Galilee," as John pointedly says (in 12:21, in a different connection), then there is no contradiction, only an unfortunate failure to clarify.

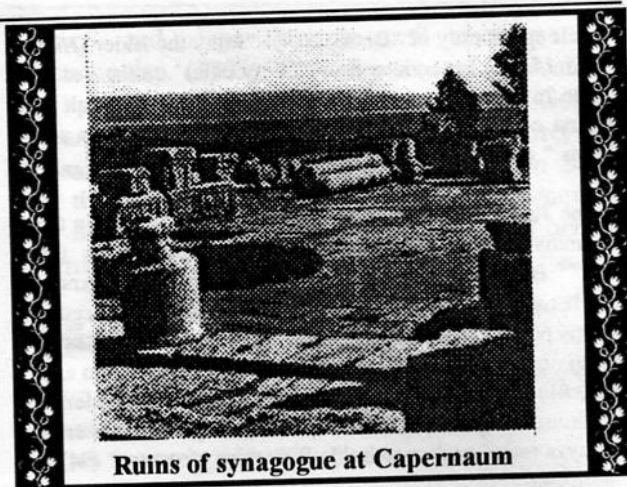
There is evidence of attempted geographic clarification by early copyists. Besides the variants in Luke mentioned above, there is an important variant in Mark. The phrase "to the other side" (εις το π'εραιον) found in most Mark manuscripts, is probably<sup>9</sup> omitted in one third-century papyrus (P<sup>45</sup>). If this is an attempted harmonization with Luke, it fails, since we still have the disciples sailing from Luke's Bethsaida to Mark's Bethsaida. But it shows us that by the third century, there was already confusion among Christians about the location(s) of Bethsaida(s). Some Latin copyists boldly (my characterization) changed "to Bethsaida" to "from Bethsaida."<sup>10</sup>

One of the problems is that each individual evangelist only refers to a single Bethsaida. Christian scholars alike have tried to settle on one location for that name, but have been unable to harmonize the two sets of geographic clues from the first century authors.

The Synoptic evangelists show no awareness of a problem; only John, with his "Bethsaida of Galilee," makes any effort to spell out the location of his Bethsaida (although Mark's Bethsaida seems to be close to Gennesaret).

John is the last of the four Gospels, and on several points (for instance, on the resurrection) he seems to intend to correct his predecessors. The specification "of Galilee" seems to be a very pointed identification of *which* Bethsaida was the home of Philip, Andrew, and Peter. Mark has Peter and Andrew living in Capernaum (1:29). However, if Bethsaida was merely the seaside district of Capernaum, the two terms could be interchangeable.

Dodd observes that John has no motive for fabricating Bethsaida as the hometown for Philip, Andrew, and Peter.



Ruins of synagogue at Capernaum

"The Synoptics have given most readers the impression that the home of Peter and Andrew was Capernaum... There is no particular reason why the name Bethsaida should be introduced, unless the evangelists believed it was actually the πολις in question."<sup>11</sup> There are strong church traditions that John and James, the sons of Zebedee, fishing partners of Simon and Andrew (Luke 5:10), also hailed from Bethsaida (Kopp, 16).

## The Two Bethsaidas

Both Mark and John testify clearly of a Bethsaida on the west shore of the lake. Even an advocate of the one-Bethsaida (in Gaulanitis) hypothesis, C.Kopp, is led by his honesty to observe that: "In its natural sense, 'εις το π'εραιον' [Mark 6:45] does in fact point to a Bethsaida on the western shore."<sup>12</sup> C.H. Dodd also leans towards one Bethsaida, yet must admit that, in John 12:21, "it is definitely stated, as it is perhaps implied in 1:44, that Bethsaida belonged to Galilee. The Bethsaida which the tetrarch Philip rebuilt and named Julias was in Gaulanitis... At any rate there seems to have been some looseness about nomenclature in these parts. Judas of Gamala (*Antique*. xviii.4) is called indifferently Γαυλανιτης and Γαλιλαιος."<sup>13</sup> I would submit that a person, who can live in more than one place, is more likely to have two geographic labels than a city, which does not move about. Kopp admits that "people have tried to show that Josephus also counted placed places as belonging to Galilee which lay outside its political boundaries. But this attempt has failed" (Kopp,15). Josephus never mentions a Bethsaida of Galilee, but he leaves most villages unmentioned; of the 204 towns and villages which he says are in Galilee, he names only 40 (Kopp, 14).

We cannot escape the observation that Luke is in some disjunction from the other three evangelists. I would suggest that the disjunction is not geographic or factual, but nominal. Luke, conversant with Gentile affairs and with connections between cities in the empire, knows of the Bethsaida raised by the Romans to πολις status, though he retains the Jewish name for the site. Luke is the evangelist most remote from the original twelve apostles and the rural middle-Galilee which they frequented. We see in his

writing a familiarity with the more important cities of Asia Minor and Palestine. Bethsaida-Julias fits this profile.

Mark and John, more familiar with Galilean viewpoints, know of the little fishing-town half way between Gennesaret and Capernaum, home of several of the fishermen who made up Jesus' group of disciples. Even if Luke knew of a Bethsaida in Galilee, his Gentile readers did not, and he preferred to mention only the more internationally-known city of that name.

Against this interpretation, Kuhn argues that Mark's description (8:23, 26) of Bethsaida as a  $\chi\omega\mu\eta$  ("village") reflects its status in Jesus' lifetime, while the later evangelists label of  $\text{πολις}$  (Lk 9:10; Jn 1:44) reflects Bethsaida's status at their time of writing, after its renaming and elevation to  $\text{πολις}$  status (Kuhn and Arav, 79). This implies an acceptance of Mark's accuracy in describing the situation as it was in Jesus' lifetime, but Kuhn does not even mention Mark's placement of Bethsaida near Gennesaret on the west coast.

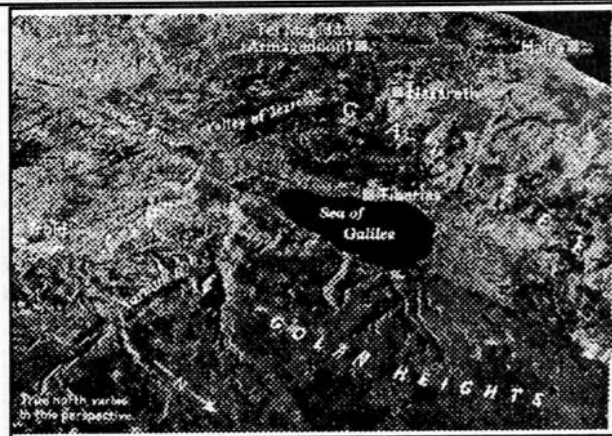
The Talmudic scholar turned Christian, Alfred Edersheim,<sup>14</sup> explained that Bethsaida means "fisher-town," and that there were two—or more—towns with that name. The Bethsaida "on the eastern bank of the Jordan... must, however, not be confounded with the other 'Fisher-town' or Bethsaida, on the western shore of the Lake, which the Fourth Gospel, evidencing by this local knowledge its... Galilean authorship, distinguishes from the eastern as 'Bethsaida of Galilee.'"<sup>15</sup>

This places Bethsaida of Galilee in the neighborhood of the towns most frequented by Jesus and the apostles; proceeding from north to south, we have Capernaum, Bethsaida, Gennesaret, and Magdala. From these towns come most of those disciples whose hometowns we know.

In this connection, it seems unlikely that Jesus was condemning this supportive village when he said, "Woe to you Chorazin... Bethsaida... Capernaum" (Lk 10:13-15; Mt 11:21). More likely he was condemning three fairly well-to-do towns whose proud and status conscious inhabitants snubbed his message.

### One Bethsaida

The one-Bethsaida theory asks us to imagine Peter, Andrew, and Philip coming from a cosmopolitan city where Jews were engaged in non-kosher fishing, a city that was named after a Roman queen! This hardly fits with the devout and rustic image of the apostles that all our sources give us. Numerous catfish carapaces, with accompanying fishing implements, have been found on et-Tell, suggesting an extensive operation farming these fish, which are non-kosher because they are bottom feeders. Some liberal halakhic rulings of rabbis (of a later period) allowed Jews to sell non-kosher meat to gentiles; such a rationalization may have been accepted in Bethsaida-Julias. But Jesus, at any rate, opposed liberal rulings on divorce and on children's obligations to their parents. John the Baptist



(whom Peter and Andrew had followed) may have been even stricter.

A northeast-shore origin for several of the apostles leaves unexplained the fact that the heartland of Jesus' activities was clearly among the villages of the west shore, where also he called these fishermen from their nets. And a cosmopolitan origin for the apostolic group leaves unexplained the aversion that the group seemed to have for the major cities of Galilee; they never visited Sepphoris or Tiberias. Nor do we have any record of them being in Bethsaida of Gaulanitis, only in a piece of country belonging to a Bethsaida, in fact, near some "villages" (Mark 6:36; Luke 9:12). The only big city which the Gospels tell of the apostles and Jesus visiting, was Jerusalem, which every Jew was obligated to visit on holy days. Their attendance at Passovers in Jerusalem (spelled out most clearly by John) indicates a traditional devoutness on their part.

The Gospels give a consistent picture of the apostles as a rustic, devout, west-shore group. The cosmopolitan and religiously loose city of Bethsaida-Julias in the Gaulanitis contradicts this picture at every point. Philip Herod erected his gravestone apparently *within* the city,<sup>16</sup> something not allowed by Jewish law. These stark contradictions are not addressed by the advocates of the one-Bethsaida theory.

The problem of two Bethsaidas is no greater than the problem—the fact—of two Bethlehems, two Hazors, two Beth-shemeshehs, two Tripolis, two Caesareas, two Antiochs<sup>17</sup>—or, in fact, two cities in the Transjordan named Julias, one in Gaulanitis and one in Perea (Kuhn and Arav, 89) Actually, it may be less of a problem, if readers understood the frame of reference of the authors they were reading: with Mark, Matthew, and John, the focus was on the Jewish homeland; with Luke, the whole Mediterranean—particularly cities of importance in the administration of the empire—is the setting. The fairly important city in the Gaulanitis and the tiny village in the Galilee (hardly more than a sea-side suburb of Capernaum or Gennesaret) are not comparable in terms of their international connections.

One of the most feeble theories is that there were two Bethsaidas in close proximity, at et-Tell and el-Araj.<sup>18</sup> This is really just a variation of the one-Bethsaida theory, for el-Araj would be nothing but a suburb of the first. It appears

to be an attempt to "let the Bible off the hook" —which is neither necessary nor scientific. Sailing from one to the other of these "Bethsaidas" would never put one "in the middle of the lake" (Mark 6:47).

The Biblical evidence clearly speaks of a Bethsaida on the west shore (Mark and John), and of another one "across" the lake (Luke, supported by Josephus; supported also by the other three evangelists as concerns general direction, though they do not refer to the Bethsaida in Gaulanitis by name.)

## Pilgrim Evidence

Eusebius, in the fourth century, is our earliest post-biblical witness. He knows of only one Bethsaida. He uses a phrase from Josephus, and seems to have et-Tell in mind (Kopp, 17). Kopp says the next two pilgrim testimonies have no geographic worth, but Theodosius in 530 places Bethsaida six miles north of Capernaum: a slight overstatement but in the neighborhood of et-Tell.

Kuhn (p.83) refers to Theodosius' account as "the oldest pilgrim itinerary," although we have seen that Kopp's more thorough investigation considers it to be the fourth testimony. Kuhn then jumps to the twelfth century, discussing errant identifications of el-Minyeh with Bethsaida. We have seen that Kopp had already dismantled these mis-identifications in his 1950 article, showing the stronger tradition that el-Minyeh is Gennesaret (20ff).

Next, "Arculf (670) describes the... course of the Jordan. It flows 'past a town called Julias' and then enters the lake of Gennesareth. Julias had almost certainly long since lost its artificial name. Thus it is surprising that he does not call the town Bethsaida" (Kopp, 18)—unless it needed to be distinguished from another Bethsaida.

The record of the pilgrim Daniel (1106) is important, because it occurs before the Crusaders have had a chance to alter or add to local traditions. He seems to locate Bethsaida at el-Minyeh, but he also speaks of a "village of Zebedee, the father of John," which he locates on Tell el-'Oreimeh or at Tabgha hospice" (Kopp, 27).

Niccola da Poggibonsi in 1345 writes of the Galilean Lake beginning "between Bethsaida and Capernaum," and he mentions no western Bethsaida, although he visited the west shore (Kopp, 19). In the 15th and 16th centuries, witnesses located Bethsaida at various places along the western shore, including Tabgha (Kopp, 31).

Variant traditions persisted for a west-shore location, for a northeast location, or for two Bethsaida. Most pilgrims speak of a single site, rather than two. It is clear that the memories of the actual locations of these towns were lost soon after the New Testament period. Bethsaida-Julias may have been abandoned after the Jewish war (Kuhn and Arav, 97)<sup>19</sup> while the Galilean Bethsaida, little more than the "fisher-town" of Capernaum or Gennesaret appears to have lost its name or to have been assimilated to its parent-town.

The two Bethsaida theory was accepted by the earliest scientific observers: "The renowned theologian and archaeologist from New York, Edward Robinson, although he himself in his diary from 1838 identified et-Tell as Julias-Bethsaida in the Gaulanitis—as the Anglican bishop Richard Pococke, who visited Palestine exactly one hundred years before him had done<sup>20</sup>—still firmly maintained a second Galilean Bethsaida, which he identified with Tagbha<sup>21</sup>" (Kuhn and Arav, 84). In 1738 Pococke was "shown the ruins of the biblical Bethsaida on the western shore" (Kopp, 20). The two Bethsaida theory enjoyed acceptance throughout most of this century, following Schurer's *The Life of the Jews* (1902).<sup>22</sup>

## Tabgha

The persistent tendency to identify Bethsaida with *some* west shore location, carries some weight. Robinson's identification of Tabgha as the specific site, supported by Daniel's love of "Zebedee's village" there, seems the most plausible. Tabgha is located two kilometers west of Capernaum. If the lake were a clock face, Gennesaret would be at 10.00, Tabgha at 10.30, Capernaum at 11.00.

Tabgha is the site of the warm springs (hence the name, "seven springs" in Greek) which draw fish to that area in the cold part of the year, and has been a favorite site for winter fishing from earliest times. Mendel Nun, longtime Galilee resident and independent historian, refers to Tabgha as the "fisherman's

suburb of Capernaum."<sup>23</sup> Josephus refers to the largest spring as "the well of Capernaum." The musth are drawn to the springs in the winter. "Capernaum fishermen stayed in this area during winter and early spring, making Tabgha an important industrial suburb of Capernaum" (Nun, 14).

We saw that Mark has the apostles leaving the feeding-site, heading back to Bethsaida (6:45), and landing at Gennesaret (6:53); Matthew concurs in the latter point, but John has them land at Capernaum. If these are consecutive sites on the west shore, the range of disagreement of the biblical records may be very small. They may even be referring to the same landing. A landing at a minor fishing



The Jordan River

village might be referred to as a landing at its parent town, either Gennesaret or Capernaum. Mark may be inconsistent by referring to both Gennesaret and Bethsaida in the same story, but literary inconsistency is not rare.

There are currently two pilgrim sites at Tabgha. The "Church of the Multiplication" celebrates the feeding of the five thousand. It appears that the name "Bethsaida" at an early date, attracted to this site the story of the feeding which occurred in the vicinity of the other Bethsaida. We saw that by the third and fourth centuries, manuscript copyists were already confused about the locale of "Bethsaida."

The other pilgrim site at Tabgha is the "Church of the Primacy," referring to Jesus statement "on this rock will I found my church" (Mt 16:18). The church is located right on the water. What appears to be the tops of ancient stone piers lie a foot or two under the surface of the lake. On the shoreline are several large heart-shaped rocks. They may have been water-level markers. In like manner, theories of Biblical scholars which are dismissed as sentimental, sometimes turn out to be accurate markers.

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[SBL.] Abstracts for the summer 1995 Budapest meeting of the Archaeological section of SBL.

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1. Kuhn, Heinz-Wolfgang and Rami Arav (cited above)
2. Kopp, Clemens D.D. (cited above)
3. *Jew. War.* 3.10.7.515; *Life* 398-406; Kuhn and Arav, 81.
4. Kuhn is "author of the first part of this article" (Kuhn and Arav, 77)
5. Also in the 1955 Chall.-Rheims Rev. This reading is based on the presence of εις τοπου ερημου in some of the oldest manuscripts: Sinaiticus, Alexandrinus, Vaticanus, and Ephraemi



They all ate and had enough. (9.17)

Rescriptus. It makes more sense than "in" the city, since five thousand could hardly crowd into the city comfortably. Furthermore, a remote setting is suggested by the apostles' anticipation of the crowd needing to go "into the surrounding towns... and get provisions; for we are in a deserted place here" (9:2). In Mark 6:31-32, Jesus twice makes reference to going to a "remote place."

6. Christian Sites Around the Sea of Galilee," in *Dominican Studies* 3, 20-27
7. This refers to crossing a significant portion of the sea; it does not signify crossing to a spot on the east coast directly opposite to the starting point.
8. Kopp, "Christian Sites" in *Dominican Studies* 3, 11.
9. Nestle-Aland's apparatus refers to P<sup>69d</sup>. The "vid" indicates "that the reading... cannot be determined with absolute certainty... [but with] a high degree of probability," *Novum Testamentum Graece*. 27th ed., p.55.
10. Richard Freund lecture of July 17, 1995 at Kibbutz Ginosar.
11. C.H. Dodd, (cited above)
12. "Christian Sites Around the sea of Galilee" in *Dominican Studies* 3, 12.
13. C.H. Dodd, (cited above)
14. 14 Edersheim, Alfred (cited above)
15. Edersheim, 1, 676
16. *Antiquities* XVIII, 4, 6. (Kopp, "Christian Sites" in *Dominican Studies* 3, 13, 35.)
17. The first three pairs involve towns in the north and south of Israel: R. Arav, 7/10/95 lecture at Ginosar.
18. Refuted in *Jesus and His World*. John J. Rousseau and Rami Arav (Augsburg Fortress, 1995), 20.
19. Sandra Fortner, on the other hand, finds pottery evidence (late Roman Terra Sigillata) for occupation of the site around the year 300 CE (from the abstracts for the summer 1995 Budapest meeting of the Archaeological section of SBL.) Fred Strickland identifies five coins from Trajan's time (98-117), he asserts that the city became uninhabited after an earthquake near the end of Trajan's reign (July 12, 1995 lecture)
- Rabbis from Bethsaida are mentioned in rabbinic sources, but not after the third century: Richard Freund, lecture at Kibbutz Ginosar, July 17 1995.
- Approximately 400CE, a catastrophic breakout flood of the Jordan River sent boulders hurtling into the delta area, destroying any anchorage sites that may have existed: John Shroder, Ginosar lecture, July 19, 1995.
20. *Description of the East*, London 1743-45
21. *Biblical Researches in Pal.* 2nd ed. 2: 404-6; 3:358f
22. This information is from Rami Arav's lecture at Kibbutz Ginosar, July 6, 1995.
23. Nun, Mendel. (cited above)

## Surfing the Sunbeams Calcium--the Wanderer of Space.

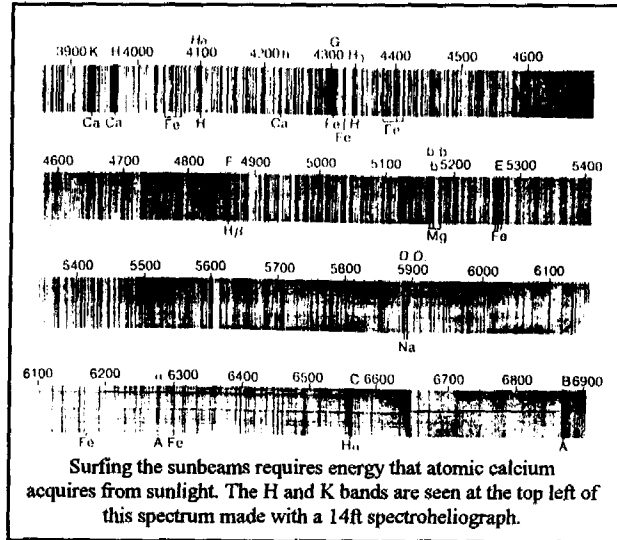
*Local space-permeation by calcium is due to the fact that it escapes from the solar photosphere, in modified form by literally riding the outgoing sunbeams. (462)*

How many of us have been puzzled by the section in *The Urantia Book* entitled "Calcium, the Wanderer of Space?" Well, the main human sources used in composing this presentation have been discovered—thanks to the unique gifts of reader, Matthew Block, and his dedicated and unrelenting utilisation of those gifts in tracking down some of the "human concepts" (17), "human thought patterns" (1343), and "cosmological statements" defined in the book as "never inspired." (1109) That source was an "Evening Discussion" course, entitled "Stars and Atoms," presented by Sir Arthur Eddington to the British Association in Oxford in August, 1926. In the hope that some adequately qualified person among our readers will now be inspired to make a comparative analysis of Eddington's and *The Urantia Book's* concepts about the wandering stone of the cosmos, relevant extracts from Eddington's lectures are appended. It appears to be available on microfilm from Ohio State University, but, if necessary, we at Innerface International, Australia, undertake to provide a copy of what we have.

From "Stars and Atoms" by Sir Arthur Eddington (Yale University Press, New Haven; Oxford University Press, London.)

P. 66. Just as the spectroscope can tell us that the sun is turning around...so it can tell us that certain stars are wandering round an orbit, and therefore are under the influence of a second star which may or may not be visible itself. But here again we sometimes find "fixed" (spectral) lines which do not change with the others. Therefore somewhere between the star and the telescope there exists a stationary medium which imprints these lines on the light. This time it is not the earth's atmosphere (as it is with oxygen). These lines belong to two elements, calcium and sodium, neither of which occur in the atmosphere. Moreover, the calcium is in a smashed state, having lost one of its electrons, and the conditions in our atmosphere are not such as would cause this loss. There seems to be no doubt that the medium containing the sodium and ionized calcium—and no doubt many other elements which do not show themselves—is separate from the earth and the star. It is the "fullness" of interstellar space already mentioned. Light has to pass one atom per cubic inch all the way from the star to the earth, and it will pass quite enough atoms during its journey of many hundred billion miles to imprint these dark lines on its spectrum.

At first there was a rival interpretation. It was thought that the lines were produced in a cloud attached to the star—forming a kind of aureole round it. The two components travel in orbits round each other, but their orbital motion need not disturb a diffuse medium filling and



surrounding the combined system. This was a very reasonable suggestion, but it could be put to the test. The test was again *velocity*. Although either component can move periodically to and fro within the surrounding cloud of calcium and sodium, it is clear that its average approach to us or recession from us taken over a long time must agree with that of calcium and sodium if the star is not to leave its halo behind. Professor Plaskett with the 72-inch reflector at the Dominion Observatory, B.C., carried out this test. He found that the secular or average rate of approach of the star was in general quite different from the rate shown by the fixed calcium or sodium lines... Plaskett went further and showed that whereas the stars themselves had all sorts of individual velocities, the material of the fixed lines had the same or nearly the same velocity in all parts of the sky, as though it were one continuous medium throughout interstellar space. I think there can be no doubt that this research demonstrates the existence of a cosmic cloud pervading the stellar system. The fullness of interstellar space becomes a fact of observation and no longer a theoretical conjecture.

The system of the stars is floating in an ocean... an ocean that is so far material that one atom or thereabouts occurs in each cubic inch. It is a **placid ocean without much relative movement**; currents exist, but they are of a minor character and do not attain the high speeds commonly possessed by the stars. [Is this concept at variance with our Big Bangers' view of the expanding universe?]

p. 67/9...Why are calcium atoms ionized?...even in the depths of space...some of the light-waves are quite powerful enough to wrench a first or second electron away from the calcium atom...(although) only very infrequently... The other side of the question is the rate of repair, and in this connection the low density of the cosmic cloud is the deciding factor. The atom has so few opportunities for repair. Roving through space the atom meets an electron only about once a month, and it by no means follows that it will capture the first one it meets... a calculation indicates that most of the calcium atoms in interstellar space have lost two electrons; these atoms do not interfere with the light and give no visible spectrum. The "fixed lines" are produced by

atoms temporarily in a better state of repair with only one electron missing; they cannot amount at any moment to more than one-thousandth of the whole number, but even so they will be sufficiently numerous to produce the observed absorption.

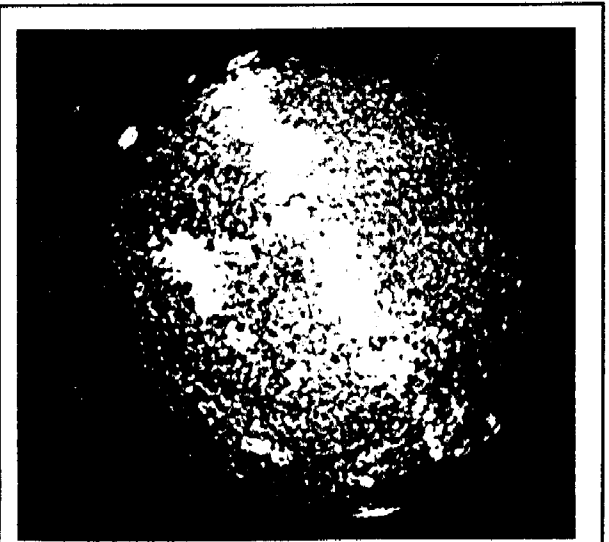
**P. 70. The Sun's Chromosphere**

...we are back to the outer parts of the sun. Fig. 10 shows one of the huge prominence flames which from time to time shoot out of the sun. The flame in this picture was about 120,000 miles high...the flames consist of calcium, hydrogen, and several other elements.

We are concerned not so much with the prominences as with the layer from which they spring. The ordinary atmosphere of the sun terminates rather abruptly, but above it there is a deep though very rarefied layer called the chromosphere consisting of a few selected elements which are able to float—float, not on the top of the sun's atmosphere, but on the *sunbeams*. The art of riding a sunbeam is evidently rather difficult, because only a few of the elements have the necessary skill. The most expert is calcium. The light and nimble hydrogen atom is fairly good at it, but the ponderous calcium atom does it best.

The layer of calcium suspended on the sunlight is at least 5,000 miles thick. We can observe it best when the main part of the sun is hidden by the moon in an eclipse; but the spectroheliograph enables us to study it to some extent without an eclipse... the conclusions about the calcium chromosphere that I am going to describe rest on a series of remarkable researches by Professor Milne.

P. 71. How does an atom float on a sunbeam? The possibility depends on the pressure of light to which we have already referred (p.26). The sunlight travelling outwards carries a certain outward momentum; if the atom absorbs the light it absorbs the momentum and so receives a



Using only the K line of calcium to produce this photo of the sun reveals a diffuse gas lying above the normal solar surface with distinctive patches of emission

tiny impulse outwards. This impulse enables it to recover the ground it is losing in falling back towards the sun. The atoms in the chromosphere are kept floating above the sun like tiny shuttlecocks, dropping a little and then ascending again from the impulse of the light. Only those atoms which can absorb large quantities of sunlight in proportion to their weight will be able to float successfully. We must look rather closely into the mechanism of absorption of the calcium atom if we are to see why it excels the other elements.

The ordinary calcium atom has two rather loose electrons in its attendant system... each of these electrons possesses a mechanism for absorbing light. But under the conditions prevailing in the chromosphere one of the electrons is broken away, and the calcium atoms are in the same smashed state that gives rise to the "fixed lines" in the interstellar cloud. The chromospheric calcium thus supports itself on what sunlight it can gather in with the one loose electron remaining. To part with this would be fatal; the atom would no longer be able to absorb sunlight, and would drop like a stone. It is true that after two electrons are lost there are eighteen remaining; but these are held so tightly that the sunlight has no effect on them....

P. 72. There are two ways in which light can be absorbed. In one the atom absorbs so greedily that it bursts, and the electron scurries off with the surplus energy (process of ionization)... Clearly this cannot be the process of absorption in the chromosphere because, as we have seen, the atom cannot afford to lose the electron. In the other method of absorption the atom is not quite so greedy. It does not burst, but it swells visibly. To accommodate the extra energy the electron is tossed up into higher orbit. This method is called excitation (cf. p. 59). After remaining in the excited state for a little while the electron comes down again spontaneously. The process has to be repeated 20,000 times a second in order to keep the atom balanced in the chromosphere.

The point we are leading up to is this. Why should calcium be able to float better than other elements? It has always seemed odd that a rather heavy element... should be found in these uppermost regions where one would expect only the lightest atoms. We see now that the special skill demanded is to be able to toss up an electron 20,000 times a second without ever making the fatal blunder of dropping it. That is not easy even for an atom. Calcium scores because it possesses a possible orbit of excitation only a little way above the normal orbit so that it can juggle the electron between the two orbits without serious risk....

P. 73. The average time occupied by each performance is 1/20,000 of a second. This is divided into two periods. There is a period during which the atom is patiently waiting for a light wave to run into it and throw up the electron. There is another period during which the electron revolves steadily in the higher orbit before deciding to come down again. Professor Milne has shown how to calculate from observations of the chromosphere the durations of these periods. The first period depends on the strength of the sun's

radiation. But we focus attention on the second because it is a definite property of the calcium atom, having nothing to do with local circumstances... Milne's result is that an electron tossed into the higher orbit remains for an average time of a hundred-millionth of a second before it spontaneously drops back again. (note: *The Urantia Book*, p. 462 says one one-millionth of a second) I may add that during this brief time it makes something like a million revolutions in the upper orbit....

P. 74. There is no prospect of measuring the time of relaxation of the excited calcium atom in a different way. (Is this still true in 1996???)

The excitation of the calcium atom is performed by light of two particular wave-lengths, and the atoms in the chromosphere support themselves by robbing sunlight of these two constituents. It is true that after a hundred-millionth of a second a relapse comes and the atom has to disgorge what it has appropriated; but in re-emitting the light it is as likely to send it inwards as outwards, so that the *outflowing* sunlight suffers more loss than it recovers. Consequently, when we view the sun through this mantle of calcium the spectrum shows a gap or dark lines at the two wave lengths concerned. These are denoted by the letters H and K. They are not entirely black, and it is important to measure the residual light at the centre of the lines, because we know that it must have an intensity just strong enough to keep calcium atoms floating under solar gravity; as soon as the outflowing light is so weakened that it can support no more atoms it can suffer no further depredations, and so it emerges into outer space with this limiting intensity. The measurement gives numerical data for working out the constants of the calcium atom including the time of

relaxation mentioned above.

P. 75. The atoms at the top of the chromosphere rest on the weakened light which has passed through the screen below; the full sunlight (at the base of the chromosphere) would blow them away... Owing to the Doppler effect, a moving atom absorbs a rather different wave-length from a stationary atom; so that if for any cause an atom moves away from the sun, it will support itself on light which is a little to one side of the deepest absorption. This light, being more intense than that which provided a balance, will make the atom recede faster. The atom's own absorption will thus gradually draw clear of the absorption of the screen below... (hence) there is likely to be an escape of calcium into space.

P. 76. By Milne's theory we can calculate the whole weight of the sun's calcium chromosphere. Its mass is about 300 million tons—less than the tonnage handled by British railways every year. One scarcely expects to meet with such a trifling figure in astronomy. I think that solar observers must feel rather hoaxed when they consider the labour that they have been induced to spend on this airy nothing. But science does not despise trifles. And astronomy can still be instructive even when, for once in a way, it descends to common place numbers.

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**Question:** *The Urantia Book* (462) gives a figure of one one-millionth of a second for the relaxation time of the excited state of calcium compared with Eddington's one hundred-millionth of a second. Is *The Urantia Book's* figure a typographical or copying error, or some such, or is it a deliberate correction by the Revelators of Professor Milne's calculations??? **Can any readers respond?**

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