

# MARSBUGS:

## The Electronic Exobiology Newsletter

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Co-editors:

David Thomas, Life Sciences Department, Belleville Area College, Belleville, IL 62221, USA, marsbugs@aol.com.

Julian Hiscox, Department of Molecular Biology, I.A.H. Compton, Compton, Nr Newbury, Berkshire RG16 0NN, England, UK, hiscox@bbsrc.ac.uk.

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### CONTENTS

- 1) EDITORS INTRODUCTION  
By David Thomas and Julian Hiscox
  - 2) BULLETIN OF ANOMALOUS EXPERIENCE  
By Greg Barr
  - 3) CONCEPT FOR A NEAR-TERM EXOBIOLOGY MISSION TO MARS. TREX (TELEOPERATED ROVER FOR EXOBIOLOGY)  
Christopher P. McKay
  - 4) CURRENT PUBLICATIONS IN EXOBIOLOGY AND RELATED FIELDS  
By Julian Hiscox
  - 5) CONFERENCE ANNOUNCEMENT-THE GORDON CONFERENCE ON THE ORIGIN OF LIFE.
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### EDITORS INTRODUCTION--SECOND ISSUE

By David Thomas and Julian Hiscox

Welcome to the second issue of MARSBUGS: The Electronic Exobiology Newsletter. In this issue we present a journal review by Greg Barr on the Bulletin of Anomalous Experience which (borrowing Greg's introduction slightly) details alien abduction phenomenon and associated topics, these issues are normally in and out of the press on both sides of the Atlantic/Pacific and grounds for best selling fiction and non-fiction books.

Christopher McKay reports on a proposal for the exploration of Mars focusing on exobiology.

In every issue we hope now to include a section devoted to papers that have been published in exobiology and related fields since the previous issue of Marsbugs, you will also find keywords underneath each article that will give readers a guide to the content (apologies for any inaccuracies).

Finally we detail a conference announcement on what looks to be an extremely interesting meeting on the origin of life, not only on Earth but also the possibility of extinct life on Mars.

As usual the life of this newsletter depends on its readers. We are in constant need of contributions of articles, essays, reviews, announcements, questions, etc. Please feel free to contribute, regardless of your field of expertise.

Exobiology is still a relatively young field, and new ideas may come out of the most unexpected places. Subjects may include, but are not limited to: exobiology proper (life on other planets), the search for extraterrestrial intelligence (SETI), ecopoeisis/terraforming, Earth from space, planetary biology, primordial evolution, space physiology, biological life support systems, and human habitation of space and other planets. We hope that you, the readers, find this newsletter useful and informative, and we look forward to hearing from you.

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### BULLETIN OF ANOMALOUS EXPERIENCE--A REVIEW

By Greg Barr

Title: Bulletin of Anomalous Experience

I have received the April 1994 issue of above newsletter (BAE). The publisher describes it as a "networking newsletter about the UFO abduction phenomenon and related issues, for mental health professionals and interested scientists."

"Estimates of the number of people experiencing contact with, or abduction by, apparently non-human entities, ranges from thousands, to tens of thousands, and higher. It is not at all a rare phenomenon. These experiences profoundly affect all aspects of the life of the abductee or contactee, and the lives of their partners and families. Abduction and contact experiences are dismissed by mainstream science and medicine, with the regrettable result that experiencers usually avoid seeking out

medical or psychotherapeutic services. The resulting morbidity and social costs are unknown."

"BAE is devoted to studying these questions:

- 1) What is the cause (or causes) of abduction and contact experiences?
- 2) How do these experiences affect people (and society at large)?
- 3) What are the best ways to help experiencers?"

"BAE is committed to no single point of view about the origin or meaning of these experiences. BAE's philosophy is that regardless of the explanation(s), a sober and rational inquiry into these phenomena can teach us a great deal about consciousness, the human experience, and the nature of reality."

Subscriptions are \$25 per year (6 issues).

David Gotlib, M.D.  
BAE  
2 St. Clair Ave. West, Suite 607  
Toronto, Ont.  
CANADA M4V 1L5  
Internet: drdave@io.org  
BAE Review (April 1994), Vol. 5 #2

The newsletter is divided into six sections: Mail, Networking, Reviews, Feature Articles, From The Scientific Literature, and Experiencer's Section. The information content in all sections is quite articulate and informative. The reviews cover such publications as:

"The Flying Saucer Subculture," by John A. Keel "Dark White: Aliens, Abductions and the UFO Obsession," by Jim Schnabel "Possession and Abduction," by Filip Coppens and consist of brief descriptions with excerpts from the source material.

The feature articles are relatively brief (the entire publication is twenty-five pages). "Religion and Discrimination: A Meditation," by Peter Rojcewicz explores the concept that religious zealotry results from the inability to distinguish between the icons of ritual and the spirit of religion. "That confusion marks a serious failure to discriminate between religious map and divine territory." The BAE publisher feels that these themes are relevant to the study of abduction experiences.

In a two-part essay, Edward Carlos, an artist and professor of fine arts, discusses "Some Spiritual Resonances in Encounter Recollections: Cognizance of the Pathology of Guilt, and Healing." Dr. Carlos' writing is a harder to follow than that of Dr. Rojcewicz and his argument not quite as clear from my layman's perspective. What is of some interest is his description of hypnotic sessions that he underwent and it isn't until then that it sank home he is himself an "encontrant" as he calls those who have encounters. Much of the essay is devoted to an assessment of the ability of individuals to capture images that they see under hypnosis and how analysts often fail to follow the apparent chaotic flow of thought.

In "Astrology, Abductions and Near-Death Experiences," Robert Kimball outlines a research project to test Ken Ring's hypothesis that near-death experiencers and UFO abductees "may have actually 'stepped into' an alternate or 'archetype' level of reality. In a study of near-death experiencers he hopes to find out if it is possible that astrological circumstances (planetary configurations at birth) lend one a proclivity towards these experiences. Alternatively do these planetary alignments

affect "windows of opportunity" during which it is more likely for these experiences to occur. He describes his statistical methodology and states that preliminary analysis of 189 persons who have had near-death experiences seem to indicate the answer is "yes." Abstracts come from the Journal of Abnormal Psychology, the International Journal of Neuroscience, the International Journal of Clinical and Experimental Hypnosis, Imagination, Cognition and Personality, the Harvard Review of Psychiatry and others. In the Experiencers' Section are a couple of statements about comparing disbelief of the Holocaust to disbelief of anomalous experiences and a personal note on alien abductions and childhood sexual abuse.

All in all this was a fascinating walk into uncharted territory. I found it accessible, for the most part, and the personal revelations strangely compelling.

About the author: Greg Barr

Studies in comparative religions, philosophy and psychology lead to a career which spans journalism, radio broadcasting, film and television production, audio and video technician, advertising agency creative direction, and non-profit management. A lifelong interest in science fiction and space development led to positions as Administrator of the L5 Society and Deputy Executive Director of the National Space Society. He is a contributing writer for LaserViews. His current full-time positions are as CFO and Development Director of Action on Smoking and Health (ASH), and volunteer CEO of CONTACT: Cultures of the Imagination.

Address for correspondence:

Greg Barr  
CONTACT  
1412 Potomac Ave SE  
Washington DC 20003-3032  
USA  
email: elfhive@bix.com

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CONCEPT FOR A NEAR-TERM EXOBIOLOGY MISSION  
TO MARS. TREX (Teleoperated Rover for Exobiology)

PI: Chris McKay, NASA Ames  
Industrial Partner: Martin Marietta

#### **Background:**

Within the Discovery Program or the Mars Level-of-effort program there will be an opportunity to propose low cost PI class missions to Mars. Within such a program the total costs of the spacecraft is expected to be about \$150 M. Typically a rover mission would be expected to greatly exceed this cost. However, the availability of the Russian Mars rover may allow for rover mission that fits within the \$150 M constraint.

#### **Science Objectives:**

The overall objective of the Mars Exobiology Rover would be to investigate the possibility that Mars may have had habitats suitable for life in the past and to search for fossil evidence of any past life. Thus the objectives are focused on understanding the past and present geochemical history of the biogenic elements (particularly C,H,O,N), organic material, and water.

#### **The specific measurement objectives are:**

- 1) Pictures: Photograph the surface of Mars at a variety of sites with resolution comparable to the Viking landers.
- 2) Dirt: Analyze the soil of Mars for compounds of the biogenic elements and organic material. Of particular

interest here are carbonates and nitrates. Their discovery would imply that Mars once had a thick carbon dioxide and nitrogen atmosphere and would also confirm that the sediments were deposited in standing bodies of water. Organic material would be looked for at depths below the oxidizing, organic-free surface.

- 3) Water: Determine the state of water in the soil; including adsorbed water, bound water, and ground ice if any.

#### Site Selection:

The current concept is that the site would be an ancient lake bed probably in the Margarifer Sinus Region. The lake bed would have to be large and flat enough for landing. The rover would then traverse the lake bed floor toward a channel that drained into the lake bed. The lake bed and channel would be selected to maximize the chance that the rover would cross terrain types.

#### Science Capability:

The rover mobility is not yet certain. Our goal is as follows:

- a) during the nominal mission (the first 90 days) we hope to cover at least 10 km.
- b) during the extended mission (after the first 90 days) we hope to cover 1 km/day for a total distance of at least 100 km from the landing site.

Sample acquisition to 1 meters.

Pathfinder Camera.

Reusable oven for heating sample with sample acquisition mechanism. EGA would be laser diode gas detectors for CO<sub>2</sub>, H<sub>2</sub>O, NO<sub>x</sub>, CH<sub>4</sub>.

Combined Atmospheric Entry Experiment and Mini Met station. Infrared Thermal emission spectrometer.

About the author:

Chris McKay is a research scientist at NASA Ames Research Center's Planetary Science division. He has authored many papers on various aspects of exobiology.

Address for correspondence:

Christopher P. McKay

NASA Ames Research Center

Mail Stop 245-3

Moffet Field, CA 94035

USA

e-mail: mckay@gal.arc.nasa.gov

#### CURRENT PUBLICATIONS IN EXOBIOLOGY AND RELATED FIELDS.

Brechignac & Wolf, 1994: Symbiose-A test bed for studies of closed ecosystems. Preparing for the Future, ESA's Technology Programme Quarterly. Vol.4. No.1. p10-11. (Artificial/closed ecosystem, bioreactor, micro-algae, bioregeneration).

Bullock et al, 1994: A coupled soil atmosphere model of H<sub>2</sub>O<sub>2</sub> on Mars. Icarus. Vol.107. p142-154. (Depth of H<sub>2</sub>O<sub>2</sub>, Viking label release/gas exchange experiment, organic molecules).

Ferris, 1994: Chemical replication. Nature. Vol.369. p184-185. (RNA world hypothesis, primordial evolution).

Hecht, 1994. "Molecule of life" is found in space. New Scientist, 11th June, 1994. p4. (Amino acid-glycine, Sagittarius B2, Fred Hoyle).

Keller et al., 1994: Formation of amide bonds without a condensation agent and implications for the origin of life. Nature. Vol.368. p836-838. (Origins of life, primordial evolution).

Lasseur, 1994: Melissa-A model of an artificial ecosystem. Preparing for the Future, ESA's Technology Programme Quarterly. Vol.4. No.1. p.12-13. (Biological life support system, waste processing, edible biomass).

Lebreton et al, 1994:Huygens-the science, payload and mission profile. ESA Bulletin. No.77. p31-41. (Titan atmosphere, Cassini mission, Huygens).

Li & Nicolaou, 1994: Chemical self replication of palindromic duplex DNA. Nature. Vol.369. p218-221. (Origin of life, self replicating molecule, primordial evolution).

Lunine, 1994: Pressure cooking on Triton. Nature. Vol.369. p21-22. (Origin of life, prebiotic soup, synthesis of organic molecules).

Lyonnet et du Moutier & Collet, 1994: Using lunar resources-the next step. ESA Bulletin. No.77. p59-68. (Moon, nuclear fusion, lunar equipment, resources, mining).

Paige, 1994: Chance for snowballs in hell. Nature. Vol.369. p182. (Ice on the Moon and Mercury, resources for manned missions).

Pavy-Le Traon et al, 1994: The use of medicaments in space-therapeutic measures and potential impact of pharmacokinetics due to weightlessness. ESA Journal. Vol.18. No.1. p.33-50. (space flight medical kits, drug properties, metabolism, adsorption).

Sievers & von Kiedrowski, 1994: Self replication of complementary nucleotide based oligomers. Nature. Vol.369. p213-218. (Origin of life, self replicating molecules).

Szewzyk et al, 1994: Thermophilic, anaerobic bacteria isolated from a deep bore hole in granite in Sweden. PNAS. Vol.91. p1810-1813. (Isolation of bacteria).

Thomas and Dieckmann, 1994: Life in a frozen lattice. New Scientist, 11th June, 1994. p33-37. (Antarctic, cold temperature micro-organisms, polar orbiting satellite).

Wagner, 1994: Bacteriorhodopsin crystal growth under microgravity-results of IML-1 and Spacehab-1 experiments. ESA Journal. Vol.18. No.1. p25-32. (Growth of crystals, microgravity).

Wolszczan, 1994: Confirmation of Earth mass planets orbiting the millisecond pulsar PSR B12 57+12. Science. Vol.264. p538-542. (Planets, search for other solar systems).

#### CONFERENCE ANNOUNCEMENT--GORDON RESEARCH CONFERENCE ON THE ORIGIN OF LIFE.

Salve Regina University, Newport, Rhode Island August 21-26, 1994 David J. Des Marais, Chairman; Gerald F. Joyce, Vice Chairman

This meeting addresses several aspects of origin of life studies, including the early history and environment of earth, prebiotic chemistry, and the geologic and molecular biological record of early evolution. A session on early Mars is also

included! A single fee (\$465, if paid before July 31) covers registration, room and board for the entire meeting. To obtain a registration form please send a request to the Gordon Research Conference Office (tel.: 401-783-4011, FAX: 401-783-3372) or to D. Des Marais (tel.: 415-604-3220, FAX: 415-604-1088, email: david\_desmarais@qmgate.arc.nasa.gov).

#### Monday AM:

- 1) External controls on the early environment; S. Chang, discussion leader.
- 2) J. Cronin, Organic chemistry of the early solar system: recent molecular and isotopic analyses of meteorites.
- 3) V. Oberbeck, Meteorite impacts and the origin and early evolution of life.
- 4) Y. Zhang, History of mantle/crust exchange of volatiles.

#### Monday PM:

- 1) RNA World; G. Joyce, discussion leader.
- 2) Schwartz, Testing candidates for a pre-RNA world.
- 3) R. Green, Defining the minimal requirements for the peptidyl transferase reaction of the ribosome.

#### Tuesday AM:

- 1) Iron and sulfur transformations; H. Holland, discussion leader.
- 2) G. Wachterhauser, The iron-sulfur world in Vitro.
- 3) K. Stetter, Hyperthermophilic communities in deep terrestrial and submarine environments: the iron-sulfur world in Vivo.
- 4) D. Canfield, The early geologic record of iron and sulfur biogeochemistry.

#### Tuesday PM:

1. The role of phosphate; D. Canfield, discussion leader.
2. G. Arrhenius, Phosphate - an early choice.
3. H. Holland, Marine phosphate and atmospheric O<sub>2</sub>.

#### Wednesday AM:

1. Mars; J. Rummel, discussion leader.
2. J. Farmer, Exopaleontology and the search for a fossil record on Mars.
3. J. Wisdom, Orbital obliquity history of Mars and Earth.

4. C. McKay, Earth analogs to past life on Mars.

#### Wednesday PM:

1. Early phylogeny; A. Knoll, discussion leader.
2. A. Lazcano, Rooting the tree of life: what came before the last common ancestor?
3. S. Barns, Novel Archaeal lineages from a natural microbial population.

#### Thursday AM:

1. Photosynthesis; R. Castenholz, discussion leader.
2. B. Pierson, Physiological ecology and the evolution of diversity among ancient photosynthetic bacteria.
3. R. Blankenship, Evolution of photosynthetic reaction centers.
4. A. Knoll, The Precambrian record of photosynthetic organisms.

#### Thursday PM:

1. Early biosphere: the rock record; B. Simoneit, discussion leader.
2. D. Lowe, Life on an early warm (hot?) earth.
3. R. Summons, Molecular fossils: the nature and quality of the record in Archean and Proterozoic sediments.

#### Friday AM:

1. Prebiotic chemistry: membranes, microenvironments and light; S. Miller, discussion leader.
2. A. Pohorille, Structure and functions of the earliest membrane systems: computer simulations.
3. D. Deamer, Membrane permeability and encapsulated catalysts.
4. P. Braterman, Photochemistry of iron(II)-containing systems in prebiotic reduction and synthesis.

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End *Marsbugs* Vol. 1, No. 2.