



SOCIETY FOR SCIENTIFIC EXPLORATION



**Fifth Biennial SSE European Meeting
October 20–22, 2000
University of Amsterdam, The Netherlands**

Program

Thursday, October 19

Reception and Registration

19:00 Cafe Eik en Linde, Plantage Middenlaan 22

Friday, October 20

09:00 Announcements and Welcome: *auditorium MC3 Plantage Muidergracht 12*

9:05 Peter Sturrock, *Stanford University*: SSE and Europe

SESSION 1

09:15 F. H. van Lunteren — *Institute for History and Foundations of Mathematics and the Natural Sciences, University of Utrecht, The Netherlands*: Extraterrestrial life and hyperphysical phenomena: A historical approach to unorthodox science

10:00 K. Arnette — *Contributed Paper* — *Dept. of Psychology, E. Washington University, USA*: Consciousness, the mind-body problem, and the resurrection of dualism

10:25 Ph. Roberts Jr. - *Contributed Paper* — *MI, USA*: Hume's Psychodynamics

10:50 Break

11:20 R. Sheldrake — *London, UK*: The unexplained powers of animals

12:05 J. Tuszynski — *Contributed paper - Starlab N.V./S.A., Belgium and Department of Physics, University of Alberta, Canada*: Can the results of Quantum Mechanics be reproduced by a classical nonlinear theory?

12:30 Lunch

SESSION 2

14:00 K. Ferencik — *Contributed paper* — *Hyperion Research, Bratislava, Slovakia*: Anomalous phenomena in the illustrative model of the holistic information field (HIF)

14:25 S. Ertel — *Contributed paper* — *Georg-Elias-Müller Institut für Psychologie, Göttingen, Germany*; Turning points of long waves in Western economies: Are they correlated with solar activity ?

14:50 N. Duffy — *Contributed paper* — *Edinburgh Dowsing Physics Group*: Planetary and solar torsion field interaction — Downsing interferometry measurements.

15:15 V. E. Zhvirblis — *Moscow*: Does Galvani current exist?

16:00 Break

SESSION 3

16:30 M. Skriver — *Contributed Paper* — *Artist - Copenhagen, Denmark*: The Trapholt Experiment

Young Investigators Contributions:

16:55 P. Stevens — *Edinburg University, UK*: The role of magnetic fields in micro-psychokinetic phenomena

17:20 M. Schotten — *Hawaii Inst. of Marine Biology*: Models of "acoustic imaging" in dolphin echolocation

17:45 U. Gausmann - Y. Buenger — *Ernst Moritz Arndt-Universität Greifswald Institut für Psychologie - Germany*: Psi and the Unconscious - Some ideas and new projects in parapsychological research

18:10 SSE Tribute - Business Meeting

Free evening

Saturday, October 21

SESSION 1

09:00 S.E. Shnoll — *Member of the Academy of Natural Sciences, Moscow, Russia*: Macroscopic fluctuations in processes of different natures as a result of cosmophysical causes.

9:45 J. Walker — *Fourmi Labs*: An attempted replication of the Shnoll effect

10:30 A. Kirillov - *Contributed Paper* — *Institute of Applied Mathematics and Cybernetics, Nizhnii Novgorod Russia*: Quantum gravity relicts as a possible source of the fine structure in probabilistic distributions for radioactivity processes

10:55 Break

SESSION 2

11:25 B. Bengston — *Contributed paper* — *St. Joseph's College, New York*: New

directions in healing research

11:50 M. Kondrashova — *Contributed paper - Institute of Theoretical and Experimental Biophysics, Rus. Ac. Sci., Moscow: Negative air ions and reactive oxygen species. Unorthodox mechanism of cure effect*

12:15 B.R. Grad — *Contributed paper - McGill University, Montreal, Canada: Reflections of a Scientist in Healing Research*

12:40 Lunch

SESSION 3

14:10 L. Pyatnisky — *Moscow Institute of High Temperatures: Effects of consciousness on the structure of water*

14:55 A.V. Nedospasov — *Contributed Paper — IVTAN, Russia: About physical carrier of weak actions on biological systems*

15:20 M. Binder — *Contributed paper - Institut für Grenzgebiete der Psychologie und Psychohygiene, Freiburg, Germany: Electrodermal activity: State of the art measurement and techniques for parapsychological purposes.*

15:45 Break

16:15 R. van Wijk — *Univ. Utrecht, Netherlands and International Institute of Biophysics, Neuss, Germany: Biophotons and Biocommunication*

17:00 J. Benveniste — *DigiBio Lab. Paris: From water memory to digital biology*

17: 45 Leaving for the Banquet

Sunday, October 22

SINGLE SESSION

09:00 R. van Veen — *Shell International Chemicals B.V., Amsterdam: The status of cold fusion*

9:45 T. V. Prevenslik — *Contributed paper - Consultant, Hong Kong: The paradigm of high temperatures in a collapsing bubble and sonoluminescence, sonochemistry and D-D fusion.*

10:10 Trofimov A.V. — *Contributed paper - International Scientific Research Institute of Cosmic Anthropeocology: Distant Interactions in "KOZYREVS SPACE"*

10:35 K. Meyl — *Contributed Paper — TZA (Transferzentrum der Steinbeis-Stiftung), Germany: Scalar waves: Theory and experiments*

11:10 Break

11:40 M. Keen — *Contributed Paper* — *Society for Psychical Research, UK*: Paranormal physical phenomena: impressions of verses, glyphs messages and drawings spread along rolls of unexposed film

12:05 S. Doorman — *The Skeptical Society, Netherlands*: On the future of unorthodox science

12:50 Concluding comments

Abstracts

From 'water memory' effects to "digital biology"

J. Benveniste

Digital Biology Laboratory, France

Dr Jacques Benveniste, Digital Biology Laboratory, 32 rue des Carnets, 92140 Clamart, France Our present research follows what has been named "the memory of water". First we empirically observed that highly dilute (i.e. in the absence of any physical molecule) biological agents triggered relevant biological systems. Some of these experiments were reproduced in three external laboratories who cosigned an article on the subject (*Nature*, 1988, 333, 816-818). Next, blind experiments with an external team (C.N.R.S.-Meudon, France) showed that the activity of highly dilute agonists were abolished by an oscillating magnetic field which had no comparable effect on the genuine molecules. Later, several hundred experiments have confirmed our ability to transfer to water, using an amplifier (*Medical Hypotheses*, 2000, 54, 33-39), the specific molecular activity of more than 30 substances, such as physiological and pharmacological agonists, antibodies (purified or in whole serum), antigens and even the specific signal of bacteria. In our most recent experiments, we digitally recorded (sampling 44 kHz) specific biological activities on a computer. When "replayed" to water, plasma, target organs, cells, or to an antigen-antibody reaction, the recorded signal induces an effect characteristic of the original substance.

These results strongly suggest the electromagnetic nature of molecular signaling, heretofore unknown. This signal, that is "memorized" and then carried by water, most likely enables in vivo transmission of the molecular specific information. We have recently obtained direct evidence for the critical role of water in the transmission of the molecular signal, at usual concentration as well as at high dilution.

We are about to start the international replication of recording and transfer of the molecular signal since we now have at our disposal a much simpler method than in our previous attempts. This method comprises 3 steps : 1) inform water. The computer-recorded signals of heparin, heparin-protamine mixture, and water (the two latter as controls) will be sent by e-mail to the participants who will " replay " them to calcium-containing water; 2) mix

informed water with decalcified plasma; 3) assess coagulation by monitoring increase in optical density using a standard microplate reader. Heparin-informed water added to plasma slows down its coagulation compared to control-informed water.

At the least, these advances illustrate the reality of the high dilution phenomenon and allow for the transmission and detection at a distance of any normal or pathological molecular activity. At most, by physically identifying the nature of the molecular signal and the role of perimolecular water in its transmission, they could profoundly change biology and medicine.

Visit his website at <http://www.digibio.com/>

On The Future of Unorthodox Science

S.J. Doorman
Dutch Skeptical Society

Abstract: During the first 60 years 20th Century Philosophy of Science has been dominated by the so-called demarcation-problem: to distinguish true science from pseudo-science. Research in the History of Science, particularly Thomas Kuhn's [1962] ("The Structure of Scientific Revolutions") seemed to imply that we have to recognize the existence of certain stages of scientific development which are to be characterized by discontinuities between what suddenly turns out to be "orthodox science" and "new science". From the viewpoint of orthodoxy, the new science then can only be seen as "unorthodox"!- Kuhn's well known example is Copernican Astronomy; since his [1962] a host of examples, not all as convincing as his, have been advanced. This particular notion of "unorthodox science" can in a certain sense only be used in a historical context, that is looking backward at well established stages in the history of science. Hence in those cases the notion "unorthodox science" is in many cases not problematic. But how are we going to deal with a question concerning the future (!) of unorthodox science? "Holistic considerations" and a notion like "self-organization" will be considered as examples which may give us some clue as to how we should approach this question.

Negative air ions and reactive oxygen species: Unorthodox mechanism of cure effect

M.N. Kondrashova, A.N. Tikhonov, E.A. Kosenko, I.A. Stavrovskaya, R.E. Kazakof, T.V. Sirota, A.V. Temnov, V.D. Tcvetkov, E.G. Litvinova, V.P. Tikhonov
Institute of Theoretical and Experimental Biophysics, Rus. Ac. Sci., 142290, Pushchino; Moscow State University; AOOT DIOD Moscow; Russia

Abstract: There are two great and intensively developed areas of biophysical investigations which are common in the essence but which are studied independently, have no contacts and exchange of information. Meantime, integration of these two bulks of knowledge will provide a deeper penetration into both of them. Unorthodox integration of these two areas seems to be also fruitful for understanding fundamental principles of life.

Reactive oxygen species (ROS). This area is extremely popular among biochemists and biophysicists and has many applications in medicine. It is issued from I. Fridovich's discovery of negatively charged oxygen, superoxide enzymatic transformation to hydrogen peroxide in the 60's. The orthodox view in this area is that superoxide and hydrogen peroxide stimulate peroxidative processes and damage living tissues.

Negative air ions (NAI). In the 20's-30's A. Tcijevsky stated that in the artificial environment of man chronic deficiency of NAI is developed, leading to diseases (common cold, influenza, hypertension, bronchial asthma, meteosensitivity etc.) which can be prevented or cured by NAI generated by electro ionizers. In spite of the fact that these phenomena were reproduced in several countries, medical application of NAI now is limited. The cause is that the physico-chemical mechanism of the biological action of NAI is still obscure and medical application is empirical.

The orthodox view in this area is that NAI induce a number of different beneficial biological phenomena and are necessary for normal life.

Superoxide as a carrier of negative charge in air ions. A. Tcijevsky foresaw ionized oxygen to be a carrier of negative charge. His view was rejected by orthodox science at that time as superoxide was not known. Now superoxide was detected in NAI.

Mild activation of peroxidative processes as a primary mechanism of beneficial biological action of NAI: unorthodox view. The presence of superoxide in NAI suggested that the mechanism of their action should be searched in the way of peroxidative process activation. However, this suggestion contradicts the orthodox view on superoxide as being harmful but not a cure factor and is not widely considered. Our investigation shows that NAI does activate peroxidative processes but more mildly than under pathology. This activation is not harmful but necessary for life [FEBS Lett.

410 (1997) 309; Biochemistry (Moscow) 62 (1997) 1089, ibid. 64 (1999) 361; Biofizika (Moscow) 43 (1998) 580]. New unorthodox view on biological necessity of ROS in low doses. More recent data evidence the necessity of micromolar ROS concentrations for living activity. The cure effect of NAI is manifested for even lower concentrations, 10^{-15} - 10^{-12} M. Damaging effect is inherent to higher concentrations.

Perspectives of integration of biological action mechanisms of NAI and ROS. This allows to elaborate individual selection of cure doses (IEEE Transact. Plasma Science 28 (2000) 230 and to explain the general biological bell - shaped dose - effect dependence.

Unorthodox device for air ionization through plant. Electrization of room plants is elaborated as a new comfortable way to enrich air with NAI.

We are grateful to Professor S.E. Shnoll who turned our attention to superoxide.

Effects of Consciousness on Water Structure

L. N. Pyatnitsky
Moscow Institute for High Temperatures, Russia

Abstract: The water is a physical system of complex hierarchy composition (S.V. Zenin). It includes steady elements (57 molecules), structural "quanta" (912 molecules), and next associations of several levels. Ensemble of the associations forms steady nonequilibrium dynamic structures of various type, which, on our opinion, acquire a features of information behavior. At the same time, the structures are sensitive to weak forces, as small external perturbations of different physical nature, including human consciousness, might influence the behavior.

In contrast with electric conductivity and refractive index of test water scattered light does reflect the finest alterations of the water structure, and lets follow effects while an operator in a peculiar state of consciousness exposes the water put into special chamber. At first, the scattering technique was employed to record signal of light scattered at some fixed angle. In this case the indicatrix could be mounted with the data for a set of the angles, though it implied long measurements. During the time signal fluctuates due to Brown motion in water, and floats due to wandering of experimental conditions. Human operator is expected to make powerful influence, rather uncommon, to overcome the measurement noise.

A new version of the technique lets view the light scattered throughout broad range of the angles, nearly full indicatrix by means of conical lens, axicon. The axicon with axial cylindrical cavity within its body, filled with water, transforms the indicatrix into its image on the surface of CCD-matrix or angular scanner. Laser radiation, in serial shots (0.53 μm) or continuous (0.44 or 0.53 μm), probes the water to register scattered light and laser intensity ratio. Also, data acquisition system monitors laser intensity itself, electronic circuit amplification factor, acoustic and magnetic fields nearby the set up, and the water temperature during the measurements, data flow of 5 Mb/min in all. Computer codes help the data interpretation. They cover a set of algorithms from simple data averaging over sliding window up to evaluating attractor dimension of the phase space trajectories, and distribution of intersection points of the trajectories with Poincaré cross-section (phase portrait).

Some examples illustrate human operator influence on water structure. Two operators acting in concert showed more valuable effect as against their individual results. The data are presented in terms of indicatrix, Fourier transform, and correlation function. One more operator lets reveal that water structure can be put in better order, at least, diameter of the trajectory distribution over Poincaré section contracts tenfold during his work, whereupon the structure restores. The effect depends on scattering angle and has maximum at 60-65°, that corresponds scale length of $\sim 700 \text{ \AA}$.

Data on Moscow solar eclipse (75%) on October 12, 1996 prove that water structure can also depend on surroundings including some geophysical events and phenomena in the sun. There were observed phase portrait essential deformations which vanished a few hours later.

References:

Journal of Scientific Exploration, Vol. 9 (1995) pp. 89-105.

The Unexplained Powers of Animals

R. Sheldrake

Many people who live or work with domestic animals claim that they show one or more of a range of uncanny powers. These claims fall into three main categories: telepathically picking up human intentions, commands or needs; a remarkable sense of direction; and premonitions. I have investigated the natural history of these phenomena and will give a brief summary of my findings. I will also speak about the experimental investigation of unexplained animal powers, in particular the ability of some dogs to know

when their owners are coming home. These experiments have given positive and statistically highly significant results that indicate that the animals can respond to their owners' thoughts or intentions even when they are many kilometres away.

Reference:

R. Sheldrake, A dog that seems to know when his owner is coming home: videotaped experiments and observations. *J. of Scientific Exploration*, Vol. 14, No. 2 (2000), pp. 233–255.

Macroscopic fluctuations in processes of different nature as a result of cosmophysical (cosmogonic) causes. Possible heterogeneity (discreteness) of space-time.

S.E. Shnoll

M.V. Lomonosov Moscow State University and Institute for Theoretical and Experimental Biophysics (ITEB)

Abstract: A 50-year study of dispersion in measurements of the rates of different processes shows that this is not an experimental error but a manifestation of fluctuations caused by cosmophysical factors. Our original tool for investigation of dispersion in temporary rows is a comparison of the fine structure of histograms obtained from experimental time series. Histograms were obtained according to small non-overlapping successive segments of time series. The fine structure of histograms distinctly changes in time. Similar histograms are observed with high probability simultaneously in different processes and even at great distances between points of measurements. This effect evidences a cosmogonic phenomenon determining fluctuations in any process irrespective of its characteristic scale of energy. The phenomenon can be the result of fluctuations of four-dimensional space-time, related to non-uniformity (heterogeneity) of gravitational structure of the World. During Earth rotation around its axis and along near solar orbit particular parts of the earth surface are regularly exposed to different gravitational heterogeneity's and this is manifested in respective forms of histograms.

The statements above are based on many year, long-term investigations (the first publication was in 1958) of different processes with careful discriminations of possible artifacts. Reviews of the main results have been regularly published in Russian and English (see references in *Physics-Uspekhi* 41 (10) 1025-1035 (1998); 43 (2) 205-209 (2000)). The investigation of the phenomenon was started from biochemical reaction rates in the 50's, was continued in chemical reaction rates in the 70's and during

last 20 years are carried out preferably with radioactive decay. The latter allows to exclude trivial "earth's" explanations of the observed effects.

The general conclusions are based on the following experimental results.

1. High probability ($p < 10^{-7} - 10^{-8}$) of fine structure histogram similarity in the nearest, neighbouring time intervals: "near zone effect".
2. High probability of repeated appearance of similar histograms with periods near 24 hours, 27 days and a year.
3. High probability of histogram similarity at any given time in independent measurements of different processes in the same geographic point.
4. High probability of histogram similarity at the same LOCAL time in measurements of different processes in different geographic points.
5. Recent data showing that ascertained period of repeated appearance of similar histograms is 23 h. 56 min, i.e. star but not solar days.

Prof. Shnoll is a well-known biologist in Russia. The publication in Physics-Uspekhi was accompanied by the following editorial comment: "The effect described in this paper may well surprise the reader. It relates to the fundamentals of physics, and so far has not been explained. This is the reason why, some-what out of line with our common policy, we decided to add the reviewer's postscript to this publication." (Editorial Board)

References:

Realization of discrete states during fluctuations in macroscopic processes, S.E. Shnoll, V.A. Kolombet, E.V. Pozharskii, T.A. Zenchenko, I.M. Zvereva, A.A. Konradov. Physics-Uspekhi, Vol. 41 (1998) pp. 1025-1035.

This article can be downloaded (PDF) the [Physics-Uspekhi](#) website.

Regular variation of the fine structure of statistical distributions as consequence of cosmophysical agents. S.E. Shnoll, T.A. Zenchenko, K.I. Zenchenko, E.V. Pozharskii, V.A. Kolombet, A.A. Konradov. Physics-Uspekhi, Vol. 43 (2000) pp. 205-209.

[Fine structure of distributions in measurements of different processes as affected by geophysical and cosmophysical factors](#). Shnoll, S., Pozharski, E.V., Zenchenko, T.A., Kolombet, V.A., Zvereva, I.M. and Konradov, A.A., Physics and Chem. of the Earth A, Vol. 24, Nr 8 (1999) pp. 711-714.

There has been started a lot of discussion about the work of Shnoll, et al. in the last few months, see <http://noosphere.princeton.edu/shnoll.html>

Extraterrestrial Life and Hyperphysical Phenomena: A Historical Approach to Unorthodox Science

F.H. van Lunteren

Institute for History and Foundations of Mathematics and the Natural Sciences, University of Utrecht, The Netherlands

Abstract: Ever since the time Copernicus turned the Earth into a planet and Descartes split up the world into a material and a spiritual realm, questions concerning the possibility of extraterrestrial life and the relationship between matter and mind have been integral parts of Western culture. These issues were usually seen to be delicate, because of several religious and moral overtones. Yet, in spite of — or maybe because of — such sensitivities, they were hotly debated and even investigated by numerous scientists in the West. As science professionalized during the 19th century, such topics were more or less marginalized up to the point of becoming 'unorthodox.' Thus a dual meaning may be attached to current scientific unorthodoxies of this kind. By their mere presence, on the one hand, they mirror some long standing cultural determinants. Their unorthodoxy, on the other hand, testifies to the peculiarities of today's autonomous science.

The Status of Cold Fusion

Rob Van Veen

Shell/Techn. Univ. Eindhoven, Netherlands

Abstract: In the lecture it will be tried to assess the present status of Cold Fusion research, with a view to predict how it may develop in the near future. Cold fusion's 11-year history will be described first, emphasising the developments that kept it from disappearing from the notice of all but a group of 'adepts'. The role of theory in assessing the CF claims is probably not all that decisive. The main problem remains the fact that the effects assembled under the CF umbrella are not [yet?] reproducible in the conventional sense — and while the workers in the field point to what look to be undeniably positive results and argue that negative results come from incorrect experimentation, unbelievers write off any positive effects as artifacts, claiming that "the closer you look, the less you see". Nevertheless, there are some, to all appearances genuine, 'anomalous' heat/nuclear measurements out there that demand explanation, and, [some of] the adepts would hope, exploitation. Given the disenchantment of the scientific community with CF, resulting in a sort of pariah status for this field, and the

unproductive record of past [semi-]industrial support for it [GE, Technova, MITI], neither seems readily forthcoming - the latter notwithstanding the continuing patenting efforts of CF-based devices from certain quarters. All the same, CF having not at all being definitively disproved, more general interest in it may at any time be rekindled — the chances for that to happen will be discussed: will it take anything less than a really reproducible effect, demonstrable to skeptical enquirers (i.e. according to an infallible protocol)?

Biophotons and Biocommunication

Roeland Van Wijk

Molecular Cell Biology, Utrecht University, Utrecht, The Netherlands
International Institute of Biophysics, Neuss, Germany

Abstract: From a biochemical point of view we might define life as a continual struggle to maintain a myriad of cellular reactions in positions far from equilibrium. The steady state so vital to life is possible only because the organization, that - in its smallest form — is called a cell, is able to take up energy continuously from its environment, whether in the form of light or organic food molecules. Carriers of this cellular organization are biopolymers and water, each being dependent on the other. Biopolymers, intrinsically programmed from inside this organization are synthesized by condensation reactions and folded in three-dimensional shapes. The structure and properties of water are essential for the proper organization of the biopolymers. Water inside the cell is in a highly ordered state, and we begin to understand why water is such an excellent host for life. The high stability of the packed and organized molecules results from strong electric and mechanical interactions. The subsequent vibrations result in pulsations of this organization of macromolecular complexes that are strongly coherent.

The organization of cells in tissues and in organs and ultimately in the body is commonly considered as a range of subsequent steps in complexity. In the view of this author, however, only one degree of complexity is present in cells and organisms, both characterized by exactly the same energetic, vibration and coherent principles. Speaking in terms of energy and coherence, an organism is not a composition of cells but it is the cell in a giant form. Some problems raised by this point of view will be discussed. Ultra-weak biophoton emission from cells and organisms can be used as a technique to demonstrate the degree of coherence and to distinguish between the so-called healthy (maximal coherent) and diseased (lower degree of coherence) states. This technique offers the possibility to observe spontaneous or self-healing phenomena on energy level.

The discussion about interconnectedness can be extended to organisms, including humans. To what extent can organisms be considered as separately living? To what extent are they naturally interconnected or can they be separated. Is our capacity to communicate suggesting that we are interconnected based on common blueprint characteristics? A few cases on paranormal healing will be used to illustrate this approach. Recent trials to apply the technique of bio-photon measurements in the study of this communication will be mentioned.

Finally some comments will be presented on studies with high potencies. These comments will be based on our own experiences.

Literature on biophoton research and delayed luminescence:

R. Van Wijk, D.H.J. Schamhart. Regulatory aspects of low intensity photon emission. *Experientia* 44 (1988) 586-593.

R. Van Wijk, J. Van Aken. Light-induced photon emission by rat hepatocytes and hepatoma cells. *Cell Biophysics* 18 (1991) 15-29.

R. Van Wijk, J. Van Aken. Spontaneous and light-induced photon emission by rat hepatocytes and by hepatoma cells. In: *Recent Advances in Biophoton Research and its Application*, Eds. Popp, Li and Gu (World Scientific, Singapore. 1992) pp. 207-229.

R. Van Wijk, J. Van Aken. Photon emission in tumor biology. *Experientia* 48 (1992) 1092-1102.

R. Van Wijk, H. Van Aken, W. Mei, F.A. Popp. Light-induced photon emission by mammalian cells. *J. Photochem. Photobiol.* (1993) 75-79.

R. Van Wijk, J.M. Van Aken, J.E.M. Souren. Ultraweak delayed photon emission and light scattering of different mammalian cell types. In: *Biophotonics*, Eds. Belousov and Popp (Bioinform Services Co, Moscow, 1995) pp. 221-232.

R. Van Wijk, J.M. Van Aken, H.E. Laerdal, J.E.M. Souren. Relaxation dynamics of light-induced photon emission by mammalian cells and nuclei. In: *Current Developments of Biophysics*, Eds. Zhang, Popp and Bischof (Hangzhou University Press, Hangzhou, 1996) pp. 126-141.

R. Van Wijk, J.M. Van Aken, J.E.M. Souren. An evaluation of delayed luminescence of mammalian cells. *Trends in Photochem. Photobiol.* 4 (1997) 87-97.

R. Van Wijk. Tote Molekule und lebende Zelle. In: Elemente des Lebens, Eds. Duerr, Popp and Schommers (SFG Fachverlag, Kusterdingen 2000) pp.155-177.

Literature on high potency research:

P.C. Endler, W. Pongratz, R. Van Wijk, G. Kastberger, M. Haidvogel. Effects of highly diluted succussed thyroxine on metamorphosis of highland frogs. Berlin J. of Research in Homeopathy 1 (1991) 151-160.

J.H. Ovelgonne, A.W.J.M. Bol, W.C.J. Hop, R. Van Wijk. Mechanical agitation of very dilute antiserum against IgE has no effect on basophil staining properties. Experientia 48 (1992) 504-508.

R. Van Wijk, F.A.C. Wiegant. Physiological effects of homeopathic medicines in closed phials - A critical evaluation. In: Ultra High Dilutions - Physiology and Physics, Eds. P.C. Endler and J. Schulte (Kluwer, Dordrecht, 1994) pp.81-95.

R. Van Wijk. Pressure-induced electrical skin conductivity as a sensitive mean for the detection by human-human interaction of subtle bodily changes. In: High Dilution Effect on Cells and Integrated Systems. Eds. C. Taddei-Ferretti and P. Marotta (World Scientific, Singapore, 1998) pp. 273-282.

Other information about the IIB: www.datadiwan.de/iib

An Attempt to Replicate the Schnoll Effect

John Walker
Fourmilab, Switzerland

Abstract: An independent replication of the time-dependence of histogram morphology reported by Schnoll et al. was performed from 2000-06-30 through 2000-07-24 using a Geiger-Müller detector illuminated by a 5 μ Ci ¹³⁷Cs check source.

Generation, classification, and comparison of histograms were performed in an entirely automated fashion using Chi-square goodness of fit metrics based on raw histogram data, Fourier-transforms of these data, and wavelet transforms of the same. In each case, comparison was done based on a best match of maximum normalised plots with the maximum shifted and the plot mirrored to achieve the best match (no change in scaling was done in this

matching process).

Best-fit histograms after each transform were binned into deciles by solar time difference between their collection, then plotted normalised by the expectation values for the null hypothesis.

No evidence for the time-dependent fine structure of random event histograms reported by Schnoll et al. was found in this study. A test data set and software tools for analysing stochastic data for such time-dependent regularities are made available in the public domain to all researchers.

This study should not be interpreted as a refutation of the results reported by Schnoll et al. It is based on a much smaller data set taken from a single generator in one location with entirely automated classification of similarity of histograms. It is presented as a toolkit for researchers interested in exploring this phenomenon who wish to test their own algorithms for classifying histograms by similarity. We believe that algorithmic classification of histogram similarity is essential to acceptance of this phenomenon.

In addition, a brief summary will be given of results to date from the RetroPsychoKinesis Project, launched in 1997, in which more than 120,000 Schmidt-style retro-psychokinesis (measuring operator influence on prerecorded data generated by radioactive decay). These experiments are available to volunteer subjects on the World Wide Web and raw data are available for downloading by all investigators.

Does Galvani Current Exist?

V. Zhvirblis
Russia

Abstract: About two centuries ago Luigi Galvani discovered that the frog's leg contracts if touched with the two ends of a conductor made of two different metals. Nothing of the kind occurs if the conductor is homogeneous. In view of this, Galvani assumed that electric current springs up at the point of contact between different metals. He called this current animal electricity. Soon, however, Alessandro Volta put forward a counter-hypothesis to the effect that a current occurs as a result of electrochemical processes going on in the electrolytic solution at the electrodes made of different metals. It is quite feasible to make a simple device in which a current springs up by the Galvani mechanism but not by the Volta one.

If two different metals are interconnected, the difference in the electronic work functions results in a contact potential difference of the order of 1 V. However, due to the difference in the conduction electron concentrations in metals, an additional difference in potential of the order of 30 mV is set up across them.

A true thermodynamic equilibrium is not achieved as the metals reveal both different electronic work functions and different conduction electron concentrations. In other words, the actual state of the system turns out to be intermediate between two steady states, one of which is determined by the system seeking to make the electronic work functions exactly equal and the other by its seeking to make the conduction electron concentrations likewise equal. Hence, if the two different metals (Ag and Al) are interconnected with a semiconductor wafer (n-type GaP) instead of the frog's leg, an unbalanced current is bound to spring up in the circuit. Since the semiconductor wafer had a resistance of the order from 10^7 to 10^8 Ohm, a Galvani current of the order from 10^{-10} to 10^{-9} A was observed.

The fact that the samples tested are active current sources is confirmed by their volt-ampere characteristics. The sample that produces no current generating effect (p-type GaP) has the usual linear volt-ampere characteristic, while the sample producing this effect has a pronounced nonlinear volt-ampere characteristic passing through the negative resistance region.

At the same time, it was noted that the test sample-generated current was generally constant during more than one year of observations but undergoes macrofluctuations with amplitude from 10^{-10} to 10^{-11} A noticeably correlating with solar activity. It is possible that the reason for macrofluctuations, that are observed in other physical as well as chemical and biological systems, is the same by its nature.