UNITED STATES GOVERNMENT

memorandum

DATE: 13 Jul 93

U-28,056/PAG-TA

REPLY TO ATTN OF: PAG-TA

SUBJECT: Release of Information

SG1J TO: DAP-4, [redacted]

1. Enclosed is a request from SAIC for approval to release data developed under Contract MDA908-93-C-004 for presentation at the annual meeting of the Parapsychological Association which will be held from 15-19 August 1993 in Toronto, Canada.

2. The unclassified material requested by SAIC for release is at enclosure 1. PAG-TA has reviewed the enclosed material and endorses its release for presentation at this meeting.

3. Request that action be taken to obtain approval from the DIA Public Liaison Staff, 703-695-0071 for release of the enclosed data.

4. Request feedback as to this request NLT 30 Jul 93.

SG1A

SG1J 5. The PAG-TA POC is [redacted]

1 Enclosure
as

Chief, PAG-TA

SG1J

OPTIONAL FORM NO. 10
(REV. 1-80)
GSA FPMR (41 CFR) 101-11.6
[illegible]

Science Applications International Corporation
An Employee-Owned Company

SGFOIA3

SG1J

9 July 1993

[redacted] 13 July 93

Dear [redacted] SG1J

In compliance with the following item from our Contract MDA908-93-C-004 in the DD-254 dated 12/31/92, Item 13.d, Security Guidance:

> *Unclassified information released or generated under this contract shall be restricted to its dissemination to contractor and government personnel involved in the contract. Release in open-source literature or exhibition of such information is strictly prohibited without permission of the Director, DIA.*

The Parapsychological Association is conducting its annual meeting from 15-19 August 1993 in Toronto, Canada. I generally encourage our scientific staff to publish their work in order that they may remain current in their discipline.

In that regard, I am requesting permission to present the enclosed paper at this meeting. In addition Dr. Schlitz of our staff is requesting to conduct a panel discussion that includes some of our work. The details of her proposed panel discussion are also enclosed with this letter.

Sincerely,

Edwin C. May

Edwin C. May, Ph.D.
Director, The Cognitive Sciences Laboratory

Enclosure:

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Other SAIC Offices: Albuquerque, Boston, Colorado Springs, Dayton, Huntsville, Las Vegas, Los Angeles, McLean, Oak Ridge, Orlando, Palo Alto, Seattle, Tucson

Approved For Release 2000/08/08 : CIA-RDP96-00789R003000490001-5

Roundtable--1993 Parapsychological Association Convention
Organizer: Marilyn Jean Schlitz
Title: The Skeptic/Proponent Debate in Parapsychology: A View From the Social Sciences
Requested Time: 90 minutes

Abstract: This roundtable considers the nature of the skeptic/proponent debate in parapsychology from the vantage points of anthropology, sociolinguistics, social psychology, and sociology. The panel is not a debate between skeptics and proponents. Rather, the discussion will focus on the role of the social sciences in identifying underlying issues within the debate as well as the position of the debate within the larger framework of scientific practice. We will consider the position of skepticism in scientific practice, competing systems of rationality that have been articulated within the debate discourse, the problems of proof and evidence in anomalies research, the peer review process in the context of anomalous claims, and how parapsychology looks from the perspective of the "mainstream." The goal of the roundtable is to facilitate a discussion about the problems facing parapsychology as a scientific discipline and the strategies that might be employed to overcome them.

Participants and presentation titles:

Marilyn Schlitz (Stanford University/Cognitive Sciences Lab, SAIC),
Introduction: The Nature of the S/P Debate in Parapsychology
David Hess (Rensselaer Polytechnic Institute)
The Social Sciences and the Defender/Debunker Debate
Marcello Truzzi (Eastern Michigan University)
Is Parapsychology Being Held to Unreasonable Standards by its Critics?
Daryl Bem (Cornell University)
Presenting Parapsychology to the Mainstream
Lee Ross (Stanford University)
Biased Assessments and Assessments of Bias: Reflections of a Recent Psychological Bulletin Reviewer

Presentation Abstracts

Introduction: The Nature of the Skeptic/Proponent Debate in Parapsychology

Marilyn Jean Schlitz
Stanford University/Cognitive Sciences Laboratory, SAIC

This presentation will provide an overview of the skeptic/proponent debate in parapsychology. By adopting a sociolinguistic perspective, the speaker will identify ideological features of the debate. While an ideal view of science features open communication between equals, she will argue that such openness, even when attempted, is frequently limited by the underlying agendas and assumptions of the discourse participants. Despite the use of language, concepts, and methods that establish a common ground between sides, effective communication among skeptics and proponents is frequently limited at best. Building upon this observation, Schlitz will consider ways in which the dispute resolution literature may be useful in understanding and ultimately overcoming barriers to successful communication between skeptics and proponents of psi research.

Is Parapsychology Being Held to an Unreasonable Standard by its Critics?

Marcello Truzzi
Eastern Michigan University

In this presentation, the speaker will draw on his sociological research into anomalous claims. He will consider the problems of burden of proof and degrees of evidence encountered by anomaly claimants. He will compare the standards of proof in normal and extraordinary science with those found in legal adjudication.

Presenting Parapsychology to the Mainstream

Daryl Bem
Cornell University

Drawing on his background in social psychology, the speaker will present his observations based on his recent publication of an article on ganzfeld–ESP research in a mainstream psychology journal and on his presentation of the ganzfeld data to the 1992 meeting of the American Association for the Advancement of Science. He will discuss reactions to this work from various quarters, including colleagues in mainstream science, in the mass media, and in the various Internet forums or newsgroups.

Biased Assessments and Assessments of Bias: Reflections of a Recent Psychological Bulletin Reviewer

Lee Ross
Stanford University

This presentation will be based on the speaker's recent experience as a reviewer for the Bem–Honorton article that was published by Psychological Bulletin. The speaker considers the issue of bias in the reviewing process and considers the standards that are used to evaluate claims of psi phenomena. Drawing on assumptions based on Baysean statistics, he will argue that alternative hypotheses must be entertained, although standards of proof should be higher in studies of anomalous phenomena since claims are more improbable.

Some Aspects of Parapsychological Research in the Former Soviet Union

Edwin C. May, Ph.D.,
Larissa Vilenskaya
Cognitive Sciences Laboratory
Science Applications International Corporation (SAIC)
Menlo Park, California

Abstract

This paper provides an in-depth discussion of research of anomalous mental phenomena (AMP) in the former Soviet Union. The authors spent approximately two months in Russia in 1992 and 1993, and interacted with researchers in Moscow and Novosibirsk. The authors primarily discuss experiments in anomalous perturbation (often referred to as psychokinesis--PK and bio-PK) which have been the main focus of anomalous mental phenomena (AMP) research programs in the Soviet Union. In particular, the authors discuss methodologies and results of experimental attempts by human operators to affect the following inanimate and animate target systems: (1) microcalorimeters, (2) electric noise generators, (3) cellular cultures, (4) plant seeds, (5) plant biopotentials, (6) frequency of impulses emitted by an electricity-generating fish, (7) eating behavior of mice, (8) person's reaction time, and (9) parameters of human EEG.

1. *Introduction*

In this paper, we present some of our observations of anomalous mental phenomena (AMP) research in the former Soviet Union resulting from our trip to Moscow in September/October of 1992 and to Moscow and Novosibirsk in May of 1993. The purpose of our paper is to provide a narrative overview of the Russian research. With few exceptions, the material we have is insufficient to provide: (1) a comprehensive assessment of the experimental details, or (2) a formal meta-analysis of classes of studies (e.g., all the bio-PK investigations). As we begin to work with our Russian colleagues, we shall provide the important additional analyses when the data are available.

AMP research programs in the Soviet Union have primarily focused on experimental studies in "distant influence" on animate and inanimate systems, i.e., psychokinesis (PK) and bio-PK. Here we can recall numerous attempts at PK experimentation with purportedly gifted individuals such as Nina Kulagina (e.g., Volchenko et al., 1984), extensive studies of mental influence on various physical systems (e.g., Bobrov, Kolesnikova, & Shraivman, 1986; Gurtovoy & Parkhomov, 1991, 1992; Kornilov & Rayevsky, 1991), plant growth (e.g., Morozova, et al., 1989, 1991) and plant biopotentials (Dolin et al., 1992; Dolin, Davydov, Lemeshko, et al., 1993), and nuclear magnetic resonance (NMR) measurements of plant seeds before and after ostensible bio-PK influence (Reshetnikova, 1989, 1991). Following this trend as observed in available Russian literature, we focus our paper on the analysis of PK and bio-PK studies.

2. *"Distant Influence" on Physical Systems*

2.1. "Distant Influence" on Microcalorimeter

Since early 1980s, Prof. Georgy K. Gurtovoy (Chief of the Laboratory on Applying Isotopes in Ophthalmology at the Research Institute of Ophthalmology and President of the International Academy of Human Potential in Moscow) and physicist Alexander Parkhomov (Gurtovoy, Dubitsky, & Parkhomov, 1993; Gurtovoy & Parkhomov, 1991, 1992) have been engaged in studies of "mental influence" on physical systems such as microcalorimeters and electric noise generators.

The set-up of one of the microcalorimeter devices used in the experiments is shown in Fig. 2.1. A Dewar flask (1) served as the external heat insulation. The microcalorimeter, consisting of an airtight copper shell (3) and a MMT (metal-metal-thermocouple) type thermistor (4) with a weight of about 20 mg was located in a metal beaker (2). There was also a similar shell (5) nearby, but it contained the control thermal stable resistor (6). The system is reportedly sensitive to changes in temperature up to 10^{-5}°C. It is extremely well shielded from the environment. According to Gur-

tovoy and Parkhomov (1992), there was no response from the micro-calorimeter to an electrostatic field with an intensity of up to 10^4 V/m, nor to a magnetic field of 10^{-2} tesla. The operators (i.e., individuals who attempt to influence the target system) were located at from 0.5 to 20 km from the device; some long-distance tests (Moscow to Novosibirsk and Moscow to Sofia) were also conducted. The task of the operator was to change the temperature relative to the control periods. Changes in temperature observed in these tests were of the order of 2×10^{-3}°C--a change of over 10 mV on the output of the recording device was considered a "hit" (Fig. 2.2). In one of the series, in the experiment between Moscow and Novosibirsk (at a distance of about 4,000 km), out of eight trials, six "hits" were recorded, $p \leq 2.8 \times 10^{-4}$ (Poisson's distribution). In nine control trials during this experiment, there was one "hit," $p = 0.111$. In another long-distance experiment, between Moscow and Sofia, there were 13 trials with 8 "hits." We compute a p-value of 1.1×10^{-4} assuming the previously stated background rate. In yet another series (within Moscow, i.e., distances of up to 20 km), out of 18 trials, 12 "hits" were recorded ($p \leq 5.5 \times 10^{-5}$). The tests seem to be carefully designed, and there seem to be no apparent artifacts that might provide an alternative (non-psi) explanation to these results. Using the method of adding p-values (Rosenthal, 1984), we compute a combined p-value of 1.5×10^{-11} for the three studies. We emphasize that our calculations may be based on an incorrect background assumption. Nonetheless, their results appear quite robust.

2.2. "Distant Influence" on Electric Noise Generators

Another series of experiments conducted by Gurtovoy and Parkhomov (1191, 1992) involved infra-low frequency electric noise generators, such as bipolar and enhancement-mode MOS-transistors, micro-circuits, and polycrystal semiconductors.[1] A noise signal was amplified and filtered with a bandwidth of less than 0.1 Hz. The generator, amplifier, and power source were located inside a shielded enclosure. During test periods, they observed an "ordering effect" (Fig. 2.3), i.e., the appearance in the background of an unordered noise signal of periodic pulsations, with a period of several seconds to hundreds of seconds, and the subsequent "dissolving" of them within the noise signal. Other effects observed included the occurrence of gradually diminishing pulsations of tens of seconds to a few seconds; the reduction of the amplitude of the noise (Fig. 2.4); or a strong growth of the amplitude of the noise during the time of the effect (Fig. 2.5).

Usually, during the test, two or three generators were working at the same time. It is claimed, although there was the lack of a correlation of the signals in the usual sense, that it was possible

[1] These are similar to the random number generator experiments in the West.

to observe in different channels the simultaneous (or with a small shift in time) appearance of pockets of periodic pulsations with a different period; sometimes there was also a simultaneous reduction of the noise level. At least one example is mentioned when an operator simultaneously affected both the microcalorimeter and electric noise generator (Fig. 2.4).

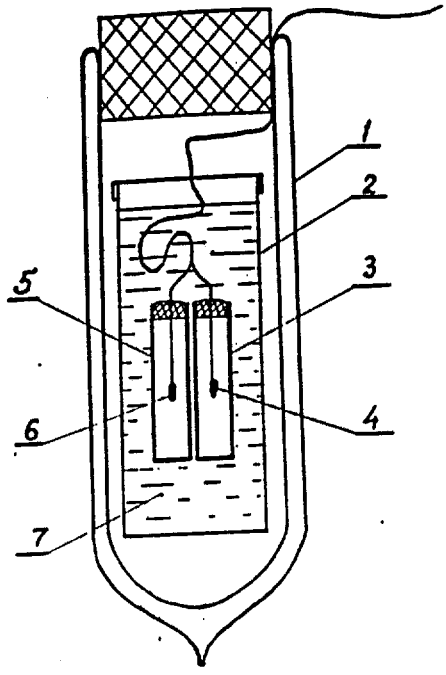

Fig. 2.1. Design of the screened microcalorimeter. 1--Dewar Flask, 2--glass, 3 and 5--shells, 4--thermistor, 6--temperature stable resistor, 7--melting ice.

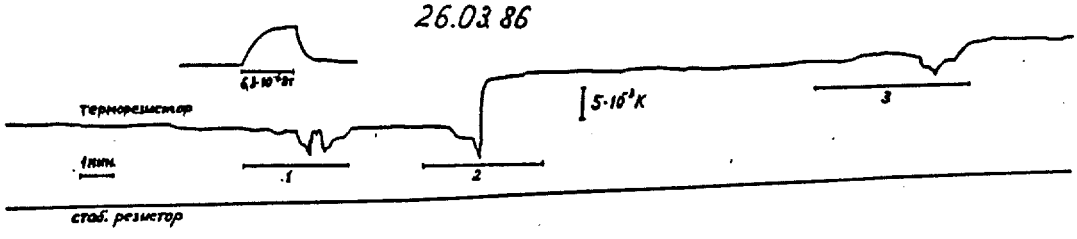

Fig. 2.2. Fragment of a record of signals obtained during tests with the operator Alan V. Chumak. 1--establishing "contact" with the detector, 2--first distant mental "effect," aimed at raising the temperature. The distance between the operator and the detector is 0.5 m, 3--second "effect," aimed at cooling. The operator is in an adjacent room at a distance of about 3 m from the detector. At upper left is the result of turning on the electric heater.

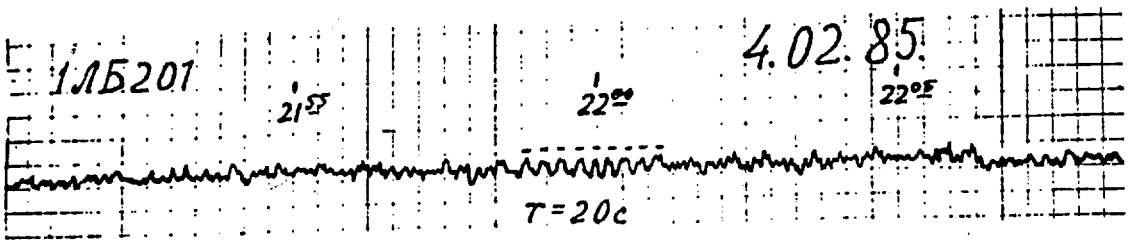

Fig. 2.3. Example of a record of the signal which contains a long pocket of oscillations within a period of 20 sec. The noise generator is the 1LB201 microcircuit.

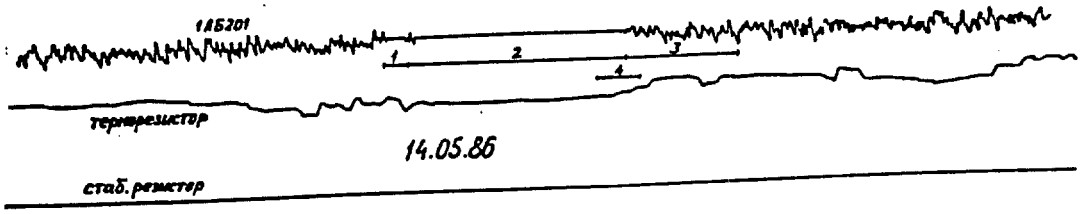

Fig. 2.4. Suppression of the noise of a microcircuit 1LB201 and fluctuations of the microcalorimeter signal during a test with the operator Valery V. Avdeyev. 1--establishing of "contact" with the detector; 2--first "effect" (the operator enters into the state of "complete calm"), 3--second "effect" (strong excitement), 4--an attempt of the operator M. Nikolayev from an adjacent room to mentally stimulate V.V. Avdeyev.

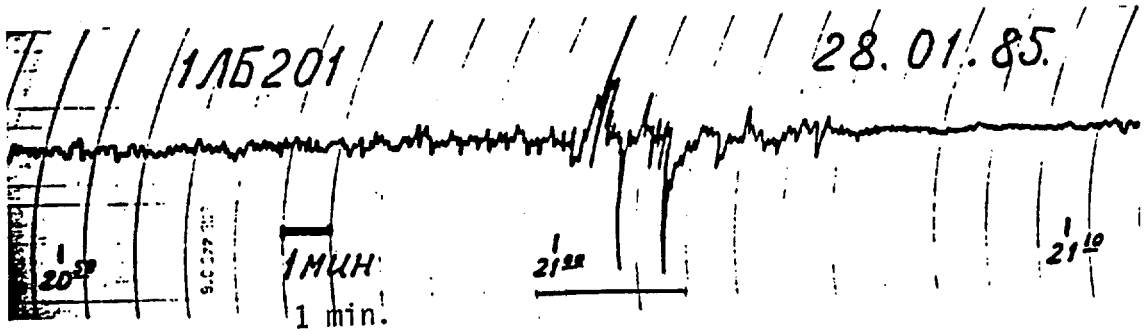

Fig. 2.5. Amplitude growth of the noise signal at the time of the "effect" of the operator P. The noise source is a 1LB201 microcircuit (MOS transistors). The time of the "effect" is noted by the horizontal line.

The most important question is: what is the probability of these "ordered" segments appearing by chance? Gurtovoy and Parkhomov do not give a definite answer to this question, thus making evaluation of this study more difficult. On the other hand, the "ordering" influence of the mind was hypothesized in other experiments, such as the attempted influence on background radioactivity conducted by Dean Radin (1992), who concluded that consciousness essentially "injects order" into random systems (p. 148).

2.3. An Independent Replication of the Tests of "Mental Influence" on Electric Noise Generators

Two other researchers in Moscow, Kornilov and Rayevsky (1991), undertook an independent replication of the study of an operator's influence on infra-low frequency electric noise generators. In the pilot test series, semiconductor generators of flicker noise (bipolar transistors, insulated-gate field-effect transistors--IGFETs, photoresistors) were placed in a brass beaker which, in turn, was placed in a Dewar flask. Amplifiers of the channels had independent power sources with precision micropower voltage regulators. Reliable screening and thermostabilization of both the sensors and the amplifiers was provided. During experiments, an operator was located at a distance of 0.5 to 3 meters from the Dewar flask. In some trials, the operator was in a separate room from the apparatus.

In more than 50 pilot tests with different operators, only in two tests were anomalous changes of flicker-noise amplitude observed. According to Kornilov and Rayevsky, the probability that these fluctuations of noise amplitude occurred by chance is close to 10^{-6}. The researchers noted that in the process of operators' influence, instances of "orderliness" of noise fluctuations described in the study by Gurtovoy and Parkhomov (1991, 1992) were repeatedly observed. However, they do not consider these peculiarities of the transistors' behavior during the operators' influence to be positive effects, because the mechanism of calculating the probability of obtaining such events by chance is fairly subjective. According to Gurtovoy, however, an almost "flat" line shown in Fig. 2.4 was never observed during the background periods.

In the spring of 1993, Kornilov and Rayevsky conducted a successful replication of their pilot study. It should be noted that in these tests the researchers observed not just small statistical changes, but rather clear macro-effects in apparently well-controlled conditions. Since such effects do not occur in control conditions, in such cases it is very important to re-examine possible sources of subtle artifacts, because the statistics of "rare" events are not well understood.

3. *"Distant Influence" on Biological Systems*

3.1. Introduction

In this section, we discuss studies conducted by several individuals we met while in Russia: the above-mentioned Dr. Georgy K. Gurtovoy and Alexander G. Parkhomov, Dr. Sergei V. Speransky of the Institute of Hygiene in Novosibirsk and Leonid M. Porvin of the Center for Research of Bioinformational Unity of Systems in Zelenograd (near Moscow), Dr. Tatyana Krendeleva and her associates of Moscow State University, Dr. Elvira V. Morozova of the Russian Agricultural Academy in Moscow, as well as experiments of psychiatrist Dr. Dmitri G. Mirza and biophysicist Dr. Yuri S. Dolin in Moscow. A broad range of biological target systems, from tissue cultures to plants, animals, and humans, were used in these experiments. For some studies, we provide more detailed discriptions than for others, depending on the amount of information at our disposal and the availability of the original sources to other researchers. If the original is a hard-to-find publication in the Russian language, or we describe the studies from pre-publication copies of manuscripts, or we base our discussion on personal interaction with the researchers, we attempt to address the methodologies and obtained results in a greater length.

3.2. Bio-PK Experiments with Cellular Cultures

Biologists Dr. Tatyana Krendeleva and Sergei I. Pogosyan and their associates at the Division of Biophysics, Department of Biology, Moscow State University, conducted several studies on the effects of operators on animate and inanimate systems (Nikolayev, et al., 1993; Pogosyan, et al., 1993). In one study, the operator (Igor B. Verbitsky) attempted to increase the chemiluminescence response of peritoneal neutrophils of mice after the introduction of latex, a standard cell activity promoter. Neutrophils are cells which take part in providing immune homeostasis of the body. The activity of cells was estimated from the magnitude of parameter K = (A-F)/F, were F = the cells' chemiluminescence level in the absence of latex, and A = the cells' maximum chemiluminescence level after the introduction of latex. For 18 tests, $F_{test}/F_{control}$ = 61.5% ± 11.8% and $K_{test}/K_{control}$ = 186.1% ± 23.9%. In other words, in test trials, the base level of chemiluminescence decreased approximately by 40%, as compared to the control; while the effectiveness of the cells' chemiluminescence stimulation by latex increased by about 80%. Thus, according to Krendeleva and her associates, the operator's effect apparently increases capability of the cells to respond to a standard stimulator, latex, by an increase in their production of active forms of oxygen. The results look suggestive of bio-PK effects, but our lack of knowledge of details of the experiment and possible sources of artifacts precludes definite conclusions. Additional studies conducted by Dr. Krendeleva and her associates will be summarized in section 3.11.

3.3. Bio-PK Effect on Electrical Properties of Plants

A group of researchers in Moscow, affiliated to the International Academy of Human Potential and headed by biophysicist Dr. Yuri S. Dolin, has been conducting numerous experiments in which electrophysiological activity of plants was chosen as a target system (Dolin et al., 1992; Dolin, Davydov, Lemeshko, et al., 1993). The methodology and results of some of these tests are included in a paper that is scheduled for presentation at this convention and is published in this volume (Dolin, Davydov, Morozova, & Shumov, 1993). Therefore, without discussing this study in detail (since details can be found in the published study, we would like to point out that the controls seem to be adequate and statistically significant results have been obtained in both experimental series: one involving an operator's effect on a single plant, and another involving an operator's purposeful effect on one of two plants randomly selected in advance. This is one of the most promising groups in Russia that is actively involved in experimental studies in the field of parapsychology, and we intend to continue our cooperation with these researchers.

3.4. Other Attempts at "Distant Influence" on Plants

Elvira V. Morozova from the Russian Agricultural Academy, together with her associates, carried out several series of experiments which involved human influence on plant seeds (Morozova, et al., 1989, 1991). The researchers used wheat, bean, cucumber, pea and other seeds. The seeds were soaked for 12 to 14 hours in water, after which a test batch was "irradiated" by an operator for three minutes. The control and the test batches were allowed to germinate in identical conditions, and after 5 to 15 days the germination of the seeds was inspected and the length of the roots and sprouts was measured. The influence reportedly resulted in an increase in germination of the seeds. In one experimental series with five different operators, the wheat seed germination was 142%, 123%, 132%, 135%, and 178%, as compared to the germination of control seeds. In other tests, operators were reportedly capable of stimulating or retarding plant growth, as well as causing two sprouts to grow from one wheat seed. According to the authors, this phenomenon was observed spontaneously in one of 967 control seeds, but in one or two seeds from every 10 to 15 seeds subjected to operator's effect. In experiments with kidney beans, sprouts of the seeds subjected to an operator's influence had an additional number of leaves. With control seeds, in one series from 38 control seeds, one sprout had this effect while from 10 test seeds four sprouts had it; in another series, from 31 control plants, four sprouts had the effect while from 32 test plants, 14 sprouts had it.

In many of these tests, seeds were placed in a grounded metal box, wrapped in black paper. Furthermore, a glass vessel with

water was placed between the experimenter's hand and the seeds in order to remove the infrared radiation of the hand. The effects of other screens (made of aluminum, copper, leather, and glass) were studied as well. In all the tests the results appeared not to depend on the material of the screen.

These tests seem to be well-controlled, but there insufficient data for detailed calculations. We recommend caution in that plant systems are particularly problematic bio-PK targets.

3.5. "Distant Influence" on Electricity-Generating Fish

Gurtovoy and Parkhomov (1991, 1992) attempted a bio-PK study in which they monitored the electric response of electricity-generating fish (*Gnathonemus Petersii*) to operators' attempts to "slow down" the fish. This was a replication of a earlier study by Protasov and his associates (Protasov, et al., 1981) conducted in the late 1970s at the Research Institute of Evolutionary Morphology and Clinical Ecology in Moscow and published in a major Soviet scientific journal. The dependent variable in these tests was the time interval between electric pulses emitted by the fish. In the preliminary series (screening) with unselected subjects, six of 31 trials were successful (> 3 standard deviations), $p < 3 \times 10^{-12}$. In the subsequent formal experiment, eight subjects performed 25 trials, 21 being successful, $p < 3 \times 10^{-18}$. In these tests, operators started working at random moments of time. The tests were conducted with the purpose of "calming down" the fish; thus, the shifts that occurred were in the direction of an increase in the pulse intervals. At the same time, as Gurtovoy and Parkhomov pointed out, it is known that the electric fish primarily responds to changes in its environment (e.g., a change of temperature, lighting, magnetic field or to sound) with a decrease in the pulse intervals. Still, although the controls as described by Gurtovoy and Parkhomov (1991, 1992) seem to be adequate, we believe more caution is necessary in working with biological systems which are highly reactive to changes in their environment.

3.6. "Distant Influence" on the Eating Behavior of White Mice

Dr. Sergei V. Speransky, whom one of us (LF) has known for over 20 years, holds a Ph.D. in Biology and is a specialist in toxicology with a long-term interest in parapsychology. As a biologist, he has always been interested in studying ESP in animals and using animals as biological detectors of human "distant influence." In the 1970s, he conducted tests on "anomalous" communication between two groups of white mice (Speransky, 1983, 1990).

The current study that Speransky shared with us during our trip was conducted in collaboration with Leonid M. Porvin, a specialist in electronic engineering, who, according to Speransky,

(the last was in the group of nine mice), respectively. While other operators worked at relatively small distances (meters from the mice), the operator who turned out to be the most successful affected mice located in Moscow from the town of Yalta in the Crimea, at a distance of about 800 miles. In January 1993, 15 mice from 39 in the test group were still alive as compared to zero in the control group. In the third series, nine out of 10 animals in one test subgroup and all 10 in another subgroup survived, as compared to three mice in the control group. The researchers in Moscow plan to replicate the experiment.

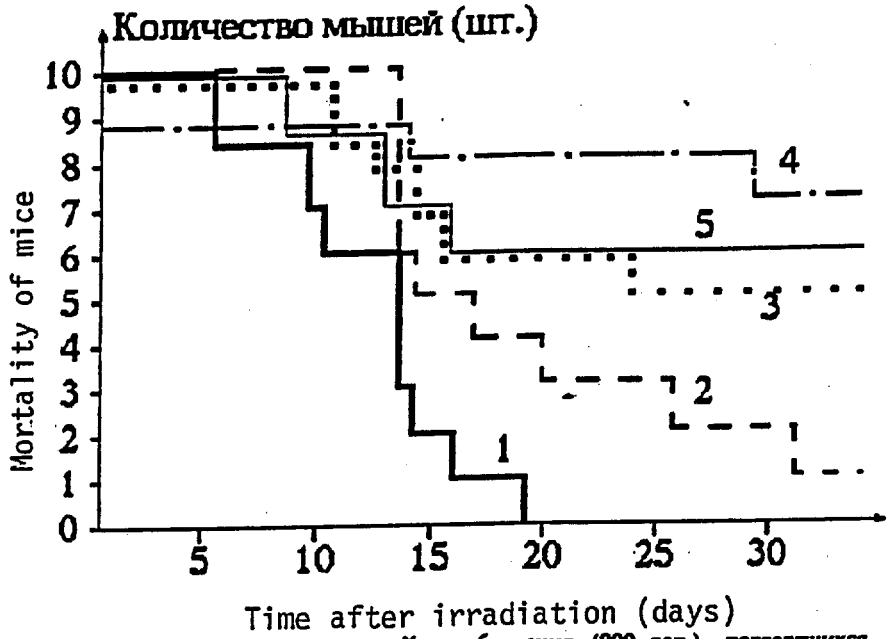

Рис.1. Гибель мышей после γ - облучения (900 рад.), подвергшихся профилактическому действию биоэнерготерапевтов.
1 - контроль; 2 - Н.Г.Балашова; 3 - О.Г.Борисоглебская
4 - М.В.Фаткин (дистанционно); 5 - Н.И.Показеев.

Fig. 3.1. The mortality rate of mice after gamma-irradiation of 900 rad in control and with attempted preventive bio-Pk effect. (1) control; (2) operator N. G. Balashov; (3) O. G. Borisoglebskaya; (4) M. B. Fatkin (long-distance); (5) N.I. Pokazeyev.

3.8. "Mental Interference" into Another Person's Thinking Process

Anatoly Arlashin of the Bioinformation Laboratory at A. S. Popov Society for Radio Engineering, Electronics, and Communications in Moscow conducted an experiment in which trained sensitives were asked to "interfere" at a distance into another (sensory-

isolated) person's mental process. Forty-four college students (average age 21 years) were invited to participate as subjects. They knew neither the focus of the laboratory's activities, nor the real purpose of the test. Each subject was asked to solve six mathematical problems which consisted in multiplying a two-digit number by another two-digit number without the help of pen and paper, with closed eyes. Problems 4, 5, and 6 consisted of multiplying the same numbers as problems 1, 2, and 3, but because the numbers were reversed, the subjects did not notice that these subsets were identical (this, however, may be a drawback of the experiment). The mental "interference" group consisted of sensitives trained in mental imagery techniques. Prior to the beginning of the test, each subject was invited to come to the room where the "interference" group was located. The subjects were led to believe that this was done in order to ask them some formal questions, but actually it was done to give the members of the "interference" group the opportunity to see the subjects they would be asked to affect mentally. In attempting the "interference," the sensitives imagined mentally "bombarding" the subject when he was engaged in a mental calculation task, by a continuous stream of numbers as well as "sending" the subjects emotions of panic, uncertainty, and a lack of self-confidence. During the test, the "interference" group and the subject were located in different rooms, with another room located between the two.

Before the actual test, each subject was asked to solve an additional math problem to "enter" the working mode. Unknowingly to the subjects, they were divided into four groups: (1) a group subjected to "mental interference" when they were solving the first three (1-3) problems; (2) a group subjected to "mental interference" when they were solving the last three (4-6) problems; (3) a group subjected to "mental interference" when they were solving problems 2, 4, 6; and (4) a control group not subjected to "mental interference" at any time.

The results were as follows: when "mental interference" was used when the subjects were working on problems 1-3, there was a statistically significant increase in the time spent by the subjects to solve the problems (42.7%, $p < 0.001$). The "interference" of two experienced sensitives, Karl Nikolayev and Ludmila Korabelnikova, was more effective, increasing the time of calculation by 71.6%. However, if the "interference" was applied when the subjects were working on problems 4-6, their calculation time decreased by 21% ($p < 0.01$). This is consistent with literature data on effects of sensory interference on performance of any mental task: when a person starts concentrating on a task, any distraction usually impedes his/her performance to a certain degree, but if the person is further ahead in executing the task he or she responds to distractions by increasing concentration. If the "mental interference" was applied interchangingly when the subject was working on problems 2, 4, and 6, there was no significant effect.

3.9. "Distant Influence" on Humans with EEG Recording

Dr. Yuri S. Dolin, a biophysicist, whose experiments with plants we discussed above, showed us the equipment and design of another bio-PK experiment. While in Moscow in the fall of 1992, we were invited to actually participate in one trial. In this test, a subject was located in a dark, soundproof, electrically-shielded chamber; his electroencephalogram (EEG) was monitored, and changes in alpha rhythm as the result of remote attention were recorded. The dependent variable was the relative alpha power change during effort compared to control periods. The data suggest that an operator seems to be able to affect alpha power of the sensory-isolated subjects. As in the above experiments on the remote effect of electrophysiological responses of plants, preliminary results of this study are published in this volume (Dolin, Dymov, and Khatchenkov, 1993), and the experiments are currently in progress. According to Dolin, the main condition for success of these tests, similar to most of the above-discussed bio-PK tests, is proper training and skill of the operators.

3.10. "Distant Influence" on Humans with Monitoring of Reaction Time

Dr. Natalia N. Lebedeva, a biologist from the Research Institute of Higher Nervous Activity and Neurophysiology of the Russian Academy of Sciences in Moscow, showed us preliminary results of a pilot bio-PK study. A subject in a shielded chamber was given a standard task to respond to a visual stimulus (a dot appearing on a computer screen at random time intervals) by pressing a button, and the subject's reaction time was measured. At certain time intervals, an operator located outside the shielded chamber was asked to affect the subject's right hand to slow down his/her performance with this hand and thereby increase his/her reaction time. This study is still in progress, and evaluation of the data has not yet been completed. According to Lebedeva, preliminary analysis of the data shows a statistically significant increase in the subject's reaction time during the operator's effect (when the subject perfomed the task with the right hand affected by the operator) in the majority of cases (70-80%) of the tests. In some cases the significant increase in reaction time for the right (affected) hand included the period of time after the operator's effect as well. Sometimes, an increase in the reaction time was seen for both hands of the subject during the operator's effect. Thus, a certain degree of variability of the data probably requires the use of different methods for statistical processing and/or changes in the experimental protocol, with the purpose being the establishment of all the variables and factors which may affect the results, e.g., physiological, methodological, operator/receiver compatibility or mental images created by the operator. In discussions with Dr. Lebedeva in our laboratory, we identified some methodological improvements for a formal replication.

3.11. Additional Summary of AMP Experiments

In our interaction with researchers in Russia, we learned of a number of other experimental studies. Some of them were very intriguing and were conducted under the auspices of prestigious research institutions. At the same time, some of the studies apparently have methodological problems. For many of them, we do not have sufficient information to provide a detailed evaluation. Therefore, instead of discussing each of these studies separately, we summarized them in Table 2. Although the emphasis is on bio-PK experiments, one PK attempt to affect inanimate systems is included as well.

Table 2

Summary of Some AMP Studies in the Former Soviet Union

Principal author and reference	Location	Experiment type	Experiment task	Comments
Krendeleva (Pogosyan, et al., 1993)	Moscow State University, Biology Department	PK on physical systems	change pH of water	pH appears to decrease with operator's effect; needs more controls.
Krendeleva (Nikolayev, et al., 1993)	same	bio-PK	change NMR parameters of plant seeds	positive results are reported; insufficient data for assessment.
Dolin (Sidyakin, et al., 1992)	International Academy of Human Potential in Moscow and Simferopol State University	bio-PK plus EMF	change animal behavior	significant results are reported; EMF modifies effect; insufficient data.
Dolin (Tkachuk, et al., 1992)	International Academy of Human Potential and a group in Kiev, Ukraine	bio-PK	change enzyme activity in plants	positive results are reported; insufficient data.
Kaznacheyev, Mikhailova (Mikhailova Merenkova, & Feldman, 1991)	Institute of Clinical and Experimental Medicine, Novosibirsk	bio-PK	increase growth of a tissue culture	20% to 30% increase in cell mitoses is reported; details of the tests are not described.

Principal author and reference	Location	Experiment type	Experiment task	Comments
Mikhailova (Kazna-cheyev, Mikhailova, & Vladimir-sky, 1990)	Institute of Clinical and Experimental Medicine, Novosibirsk	bio-PK	affect RNA synthesis in tissue cultures	positive results are reported; insufficient data for assessment.

4. Conclusions

In concluding this review of some aspects of parapsychology in the former Soviet Union, we would like to point out that in Russia, as elsewhere, there is a wide range of research skills. We found the researchers to be enthusiastic and, in some cases, the experimental work suffers. At times, some experimenters are not as self-critical as good science might dictate. Writing styles and reporting standards often make formal analysis difficult. Additionally, the "culture" is strongly biased toward an influence (PK) model. Alternative theoretical views, similar to the Intuitive Data Sorting (IDS) informational model (May, et al., 1986), are not only non-existent, but in discussions are often rejected outright, without being examined.

Nevertheless, one conclusion can be made with a high degree of certainty: for a number of years, researchers in the former Soviet Union have been engaged in a broad range of studies of anomalous mental phenomena, primarily in the PK and bio-PK areas. Such prestigious institutions as Moscow State University and the research institutes of the Academy of Sciences have been involved in AMP studies that are supported by both government and private funding. We believe a more comprehensive review and meta-analysis of AMP studies in Russia should be conducted. We also hope that our cooperation with our Russian colleagues will continue and will provide all of us with deeper understanding and insights into manifestations of anomalous mental phenomena.

Acknowledgements

We thank Dr. Marilyn J. Schlitz, Mrs. Charlotte Berney, and Mr. Douglas MacGowan for their comments and editorial assistance.

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