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LUMINESCENCE PHANTOMS

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Exactly 10 years ago the Moscow publishing house "Znanie" (Knowledge) published a short book entitled "In the World of Miraculous Discharges." Its authors, Krasnodar Mechanic Smen Davidovich Kirlian (currently a noted inventor of the RSFSR) (Russian Socialist Federated Republic) and his wife, Valentina Khrisanfovna Kirlian, described an original method for photographing objects in an RF electrical discharge that they patented as early as 1949.

At that time there were few who had any idea of what significance consequences the appearance of this brochure would lead to; hardly anybody guessed at the "Kirlian" effect" would become truly world famous. In a paper by Senior Scientific Associate Victor Adamenko titled "Rays of Life" and printed in our journal (No. 7 for 1973) the story was told of the history of the discovery made by the Kirlians, of "electrographic" photography which preceded "high-frequency" photography, of the work on the development of the latter which has been carried out both in our country and abroad--in Bulgaria, in Romania, the German Democratic Republic, Czechoslovakia, Brazil, the Federal Republic of Germany, England, USA. . . Only in the USSR have tens of scientific and scientific-popular articles been published on high-frequency photography; several dissertations have been devoted to it, and engineering improvements of it are protected by 20 patent authors' certificates. Currently, the "Kirlian" effect" is used in the most varied fields of science and engineering: in geology,

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in psychology, in chemistry, and in biology. Even "space" specialists from NASA have become interested in it. However, many scientists consider that the main field of application of "high-frequency" photography is medicine. We have already told of research in this field by Soviet specialists--doctor of biological sciences, Viktor Inyushin, and doctor of medical sciences, Ruben Stepanov. And comparatively recently, in January 1974, the journal "News of Clinical Psychiatry" carried a paper by Dr. David Sheinkin from the Institute of Bioenergetic Analyses (USA) concerning the application of the "Kirlian effect" for diagnosis of a series of illnesses (Kirlian himself was the first to point out this possibility).

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It's distinguishing property, as the Kirlian's noted, is a uniform field (in the absence of the object) which is created as a result of the dielectrics.

In any electrical discharge there are electrons and ions. The discharge is accompanied by electromagnetic radiation having a broad spectrum: radio waves in various bands, infrared rays, light and ultra-violet rays. However, a high often voltage discharge also contains x-radiation which develops as a result of the stopping of the accelerated electrons in the electrodes. Thus, what is it that causes "high often frequency" photography?

First of all the radio waves and infrared waves drop out--they do not illuminate the photographic film. The remaining "pretenders" I checked by means of fairly simple experiment. Highly sensitive photographic film was replaced in the device by an electro luminescence screen (Fig. 3). The object consisted of an ordinary coin. An excellent image was obtained on the screen. Justice already proves that visible light plays no special role in obtaining Kirlian photographs. After all, it is impossible to excite a phosphor (ZnS) with weak light (and the intensity of Kirlian luminescence is very insignificant). Here a powerful laser is probably necessary.

It is relatively simple to "filter out" x-radiation. It turned out that this radiation is also irrelevant here. However, it is more complicated to "filter out" ultraviolet radiation. Ultraviolet filters do not work under

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these conditions, since they are polarized in the electric field. A simple solution was found: instead of conventional photographic film (in the initial device) a special film insensitive to ultraviolet radiation was used. The image was obtained in this case also. Consequently, it is electrons or ions that are "guilty" and "high often frequency." It is not "sort them out." An aluminum coating with a thickness of $1/2 \mu$) that was transparent to electrons and opaque to ions was deposited on the electro ilumescent screen. The image did not disappear. This means that this means that we can draw a final conclusion: electrons "trace out" the Kirlian patterns.

Where then do these electrons come from? In a strong electric field cold electron emmission takes place (auto electronic emmision). It is called this because unlike thermoionic emission (the emission of electrons by incandescent metals) the temperatuer of the substance is not lowered when electrons are released from it. If the curve for the dependence of current on field intensity is taken in the Kirlian device (in the prebreakdown), it coincides with the theoretical curve for cold-emission current. This proves that the essence of the physical processess is also the same.

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Thus, electrons are emitted the electrodes due to cold-emission. But in the Kirlian device the objectives themselves: inorganic and living objects serve as the electrodes. For example, in photographing the skin of a fingertip, one of the electrodes is the finger itself (see Diagram 5 for my article in "T. M." No. 7 for 1973). Cold-emission from living organisms! Such a phenomenon has not yet been observed--after all, cold-emission has usually been obtained from metals then only in a vacuum. How then do living

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organism emit electrons at atmospheric pressure and still remain undamaged in these conditions? Here the principle role is probably played by three factors: the use of high frequencies, the "shielding" of the metallic electrodes with dielectrics, and the post operating mode of the oscillator.

The high often frequency current does not penetrate deep in the electrodes (unlike direct current), and as a consequence the skin-effect propagates only along the surface. Therefore, even very high voltages at frequencies of hundreds of kilohertz are in practice safe for living organisms. At the turn of the century Nicola Tesla--a pioneer in the development of high frequency engineering--demonstrated to a shaken public a gripping act: he passed a high often frequency current at a voltage of up to 80 million volts through his body!

Figure 1. Obtaining the images of objects in the high often frequency discharge (1 are metallic plates; 2 is a dielectric film; 3 are the lines of electric field; 4 is a high often frequency oscillator; 5 is the object).

Figure 2. Universal device for obtaining high often frequency images of complex surfaces (1 is an elastic dielectric; 2 is the photographic surface; 3 is an optically transparent current-conducting coating; 4 is the discharge cap).

Figure 3. Observation of images of objects on an electro illumescent screen (1 is a teflon washer; 2 is an electrode; 3 is a coaxial cable; 4 is the discharge cap; 5 is a transparent current-conducting coating; 6 is a glass washer; 7 is the object which consists of a coin; 8 is a ring for controlling the discharge cap; 9 is the electro illumescent coating).

Figure 4. Obtaining images in a high often frequency discharge in a low-pressure gas (1 is the oscillator; 2 is the coin electrode; 3 are the lines of force of the electric field; 4 is a glass vessel; 5 is the lumesent coating; 6 is the transparent current-conducting coating).

Legend for Figure 3: A--to high often frequency oscillator

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The principle of auto electronic emission is its instability. Therefore, cold cathodes are hardly used at all in electrode devices. But at low currents (several micro ampre) this emission is nevertheless stable. "Shielding " of metallic electrodes with dielectrics is what creates the conditions for obtaining stable auto electronic emission. Dielectrics are polarized, and each of their molecule-dipole (in the ideal case in the absence of an object) constitute an elementary auto electronic emitter. Therefore, cold emission takes place not from a single point but from the entire polarized surface of the dielectric. Thus, the auto electronic current is also distributed over the entire surface and this means that in each micro channel of the discharge which develops for ionization of air by "cold" electrons is very small.

The pulse operating mode of the oscillator is chosen for the following reasons. First, in photographing living organisms the average oscillator power may be small (this is necessary for the safety of these organisms), although its pulse power is significant (this is required for the development of the discharge). And second, to the extent "cold electrons" escape from the surface of the object and cause ionization of molecules, a discharge cap is filled with ionized air. This leads to. . .

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He discovered that in persons suffering from some illness^{ly} rigorously defined change in the structure of the luminous corona was observed. It is curious that in certain cases it turned out to be possible to register this change even before the appearance of the first symptoms of the illness.

And what has been said above is quite sufficient to understand why the "Kirlian effect" is gradually being transformed from an exotic phenomenon to a convenient method for solving many practical problems. Of course, it is premature to assert that "high often frequency" photography will no longer bring surprises. A wack confirmation of this lies in the mysterious phenomena which have been discovered as the "Kirlian effect" continues to be applied. Certain of these still have not been explained successfully. It is these mysterious facts (true, only five of them--space simply does not permit a greater number of examples to be given) that the comments of Engineer Larisa VIOENSKAYA have been devoted.

"THE REVIVED LEAF." A plant leaf that had just been torn off was placed in the discharge device. The current was switched on, and a blueish luminescence (Fig 1A) appeared on the surface of the leaf. Then several needle pricks were inflicted on the leaf. And it responded instantaneously to the mechanical action: A reddish luminescence appeared at the spots of the wound (Fig. 1B). After a certain time the leaf began to wilt, and its luminescence gradually attenuated (Fig. 1C). But then a person walked to up and extended his hands a distance of 15 to 20 cm from the leaf. The "healer" literally poured fresh forces into the dying cells: after several minutes

the luminescence of the leaf became renewed (Fig. 1D). This is how a leaf responded to bioenergetic action...

This experiment was performed in 1972 by Professor Thelma Moss at California University. Having taken up the study of the "Kirlian effect," she decided first of all to use it to investigate remote interaction between living systems. Specifically, she was very interested in the experience gathered during the work of the Tblisi healer Alekesi Krivortov (see the article by A. Khar'kovskii title "A 'Magician' Walks into the Laboratory" in "Captikan" No. 3 for 1969). Moss was able to find people who confirmed, like Krivorotov, the fact that they could more or less heal by the "laying on of hands."

How can one check such bold announcements? Let us assume that the patient says that he feels better; but, after all, "better" or "worse" are purely subjective estimates. As far as traditional methods of research are concerned, they are in all their objectivity fairly complex and prolonged. Here is where the "high oxygen frequency" photograph came to the rescue. It turned out that during a seance of bioenergetic action a clearly defined change in color and intensity of skin lumiscence was observed in both the "healer" and the patient. These results were obtained in the laboratory of Newark Engineering College by Dr. D. Dean.

However, one confusion remains: after all, the patient knows that one is trying to help him in some way. It may be the "high often frequency" photograph simply reflect a change in the person as a result of suggestion and self-suggestion? It is then that an experiment was thought up on the effect of a person on a wilted plant leaf. In the opinion of Moss the experiment confirmed the fact that the "healer" radiates a certain energy which acts on living objects.

"Kirlian photography may be an indicator of the interaction of people in a wordless, invisible and probably electrical way" wrote Moss in her paper published in the collection "Galaxies of Life." This collection was published in the USA last year and was edited by the well-known psychologist Stanley Krippner. The material of the first conference in the West on the "Kirlian effect" were published in the collection.

Thus, here is a reliably established fact for which there is yet no explanation. What is this "some energy" and does it really have a beneficial effect?

THE RIDDLE OF MUMIE (mummifying substance). ^{has} As repeatedly been noted in the literature, "Kirlian method" is an irreplaceable indicator of psychophysiological processes that go on in the human organism. This method may be used to register the slightest fluctuation in the state or even the mood of an individual. For example, a person merely needs to become a little excited or frightened, and the luminescence of his skin instantaneously changes its color and intensity; the shape and structure of the corona become quite different (see the paper by V. Adamenko titled "Raise of Life" in "T. M. No. 7 for 1973). A group of students at the Moscow Engineering-Physics Institute likewise recently confirmed that during emotional excitement ^{spectral} of a person a shift in the characteristics of the luminescence is observed.

Incidentally, research in this field promise great unpleasantness to people addicted to all kinds of intoxicating substances. Thus, this journal has already told of the fact that with the aid of the "Kirlian effect" one can accurately determine whether or not a driver has been drinking or not.

The Aureole of a finger changes radically immediately after "taking" even one

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no less curious. Sixty-five volunteer subjects were divided into two groups: the members of any group took a small dose of marihuana, while the other group took a dose of an indifferent substance. Then Kirlian photographs of the luminescence of the skin on the tips of the fingers were made for all of the subjects. And what happened? From the pictures it turned out that one could determine without error who among the tested subjects was under the influence of the narcotic. Note that neither the experimentalist who evaluated the photographs nor the tested subjects knew which group they were in--this could be clarified only according to papers stored secretly before completion of the experiment.

Senior Scientific Associate, Victor Adamenko performed a similar experiment. The mysterious substance mumie (a mummifying substance) was used as the investigative "doping" substance. In Figure 2 at the left you can see the lumiscence of the finger of a person in the normal state while at the right you can see the finger of a person after mumie has been taken. The difference is obvious. Is it not possible that the Kirlian method will help to uncover the secret of the effect of the most ancient medicine? Scientists have already been struggling with this problem for more years than one (see the paper by A. Grechikhian, titled "The Tears of Stone Giants, Mumie: Legend and Reality" in "T. M." for 1971). And maybe the key will be found to solving the riddle of the effect of other folk medicines also as a result of "high oxygen frequency" photography? Which of their components act on the human organism to change the luminescence? What specifically do the variations in color, shape and structure of the corona characterize? These questions remain unanswered for the time being.

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ONCE MORE ON THE BAXTERFX. Let us turn to another experiment which is associated with the world of plants. This photograph (Fig. 3) was obtained in 1972 by the English researchers T. Milner and E. Smart. The left photograph shows a living leaf that has just been torn off, while the right photograph shows a wilted leaf that has already been lying for days. The energy field of the first, as it were, "transmitted" to the second; the green "healer" literally tries to "revive" his compatriot. This phenomenon, which is very strange and amazing, compels us to remember again the "large detectors" which this journal has reported on in the past (see the paper by V. Adamenko titled "Live Detectors" in "T. M." No. 8 for 1970).

Several years ago the American specialist, the director of Research Committee of the Academy Criminological Sciences, Clive Baxter, noted that the fluctuations in the emotional state of a person "changes the electrical potential in the plant leaf." Later he demonstrated this kind of remote interaction to be inheritant in other biological objects as well.

The "intercourse" between living cells at a distance was also revealed in an experiment by a group of Novosibiska scientists under the supervision of Doctor of Biological Sciences Viol Kaznacheev (see the journal "Znanie-Sila" ("Knowledge is Power"), No. 3 for 1973). In itself, the experiment is simple. Tissue cultures are placed into two quarts vessels standing next to each other. Then one of the cultures is contaminated with viruses or killed with poison, and at that moment the most amazing thing happens: after the first culture has perished, it becomes the turn of the second culture, even though the possibility of the virus entering has been excluded. Under these conditions it follows that if the first culture dies, for example, from poisoning by mercuric chloride which blocks the respiratory enzymes, it follows that the second one also

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perishes specifically from "suffocation." This phenomenon, which is called the "mirror cytopathic effect" by the researchers, has been officially acknowledged to be a scientific discovery and has been written into the register of discoveries with the designation No. 122.

Why does this occur? Kaznacheev assumes that: the cells that have perished emit ultraviolet rays that act fatally on the healthy one. The assumption is based specifically on the fact that for replacement of quartz vessels with glass ones the indicated effect was not observed. However, in the Baxter experiments the person and the plant, as well as different colonies of bacteria, interacted with one another outside the limits of direct visibility also. It is not exclusive that the described experiments are in consequence of more complicated profound processes that go on in living nature. Regretably, we still know very little concerning the sensitivity of biological systems to external influences, of their capability of responding to various forms of physical fields and radiations. All of these problems still await their researchers.

THE ELECTRICLA TRACE. At the beginning of the 1960's a communication appeared in our press concerning Rosa Kuleshova from Nizhnii Tagil who had the capability of "skin vision." She could read the letters of a text while blindfolded, and could determine the color of objects by touch, as well as the topics of drawings and photographs. These communications aroused great interest both on the part of scientists and on the part of the broad public (see the selection of materials titled "From Sensational Thoughts to Serious Research" in "T. M." No. 2 for 1965).

Later it turned out that the capabilities of Kuleshova are far from being unique. A. Novomeiskii in Sverdolovsa, N. Sudakov in Magnitogorsa,

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A. Shevelev in Odessa and other researchers found people who successfully demonstrated "skin vision." Certain of them obtained good results not only under ordinary conditions (when the recognized object was touched) but also in those cases when the object was situated in a black envelop or in a metal box.

Researchers advanced numerous hypothesis in attempting to explain such strange phenomena, but not of them received final experimental confirmation. And here the "Kirlian effect" again comes to the rescue. Let us photograph some object--for example, a signature (Fig. 4A)--in a high often discharge; then let us cover it with a sheet of black paper and take another photograph (Fig. 4B). On this photograph obtained by V. Ademenko in 1968, a barely dimmed luminescence signature shows up, although it is hidden from our eyes. Who knows whether or not such a "electrical trace" of an object will lead to the solution of the problem of "skin vision?"

THE PHANTOM LEAF. Ademenko^e posed still another riddle. In 1966 he accidentally discovered the following phenomenon: if the edge of a plant leaf has several millimeters cut off from it, then the luminescence will cover the missing part, and the leaf will, as it were, remain whole on the Kirlian photograph (Fig. 5A). All this was so unusual that naturally it caused doubt. Moss repeated this experiment and was convinced in the reality of the strange phenomenon (see Fig. 5C) and the Brazilian researcher, director of the Institute of Psychobiophysics Ernani Andrade modified this experiment somewhat. He did not cut off but killed the portion of the leaf and obtained the same result (Fig. 5B).

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What then are these "luminescent phantoms?" Do they not indicate that a living organism is permeated by an energy "skeleton" which vanishes only after the entire organism has perished?

Regretably, observations of this kind have given a reason for individual foreign authors to state that some notorious "aura" or "ghostly emanation" is being recorded here. These communications evoked a negative reaction in many, while the Leningrad journalists Vladimir L'vov subjected Kirlian's work to severe criticism having defined "high often frequency" photographing nothing more or less than a harmful "photographic trick thought up for the benefit of the Krasnodar couple" (see the newspaper "Evening Leningrad" of March 27, 1974).

Can one agree with such an evaluation of the Kirlian method? Even from our brief narrative it is obvious what a magnificent instrument for puzzling out the sacred secrets of nature this method may serve as; how many new interesting problems it has posed for scientists...

This very month Third International Conference on the "Kirlian Effect" will be held in San Fransico. What will be the new research and riddles that we will find out about from the papers read by the participants in this symposium?

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