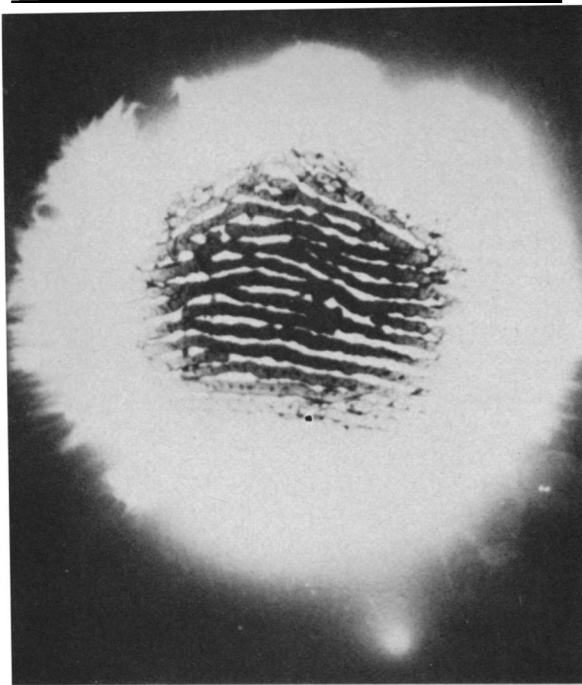


Science focuses on a 'light of life'

Kirlian photography, controversial and poorly understood, nevertheless could become a valuable diagnostic tool

by Lisa J. Shawver



Light radiating from a fingertip.

"It may be a discovery as important as Einstein's theory or it may be nothing."

"Medicine, dentistry, criminology, geology, agriculture, archaeology, forensic medicine might all benefit from the breakthrough."

"It may be a long time before we understand the phenomenon revealed but the promise is rich . . . we may learn much about the invisible bio-energy of organisms."

"The subject is unworthy of serious investigation."

"It is a new frontier for investigation."

This wide range of comment concerns a novel photographic process now stirring controversy among American scientists. Kirlian photography, invented in 1939 by Russian researchers Semyon and Valentina Kirlian and introduced to the United States three years ago, produces startling photographs of pulsating, multicolored lights streaming from the human body and from plants. Psychologists, psychiatrists, biologists and physicists, as well as investigators of psychic phenomena, are looking into Kirlian photography (also known as radiation-field photography) as a new way of observing energy fields associated with living organisms.

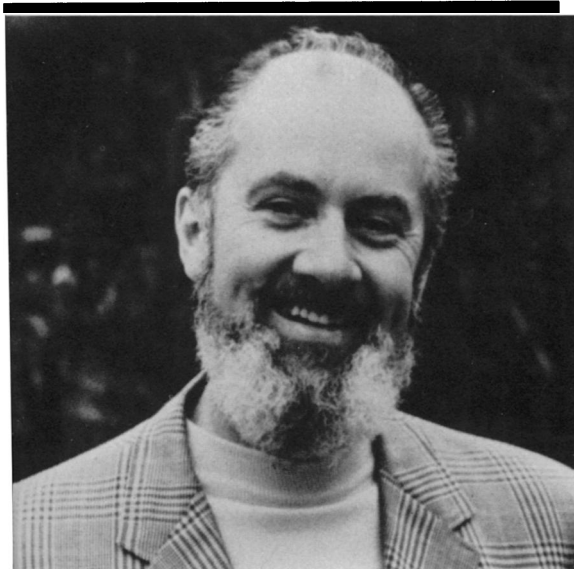
Unusual experiments are being performed throughout the United States and Russia with remarkable claims being made—many based on little information and attained under loosely controlled experimental conditions. However, reputable American scientists are now attempting to improve testing con-

ditions to better evaluate the phenomena involved.

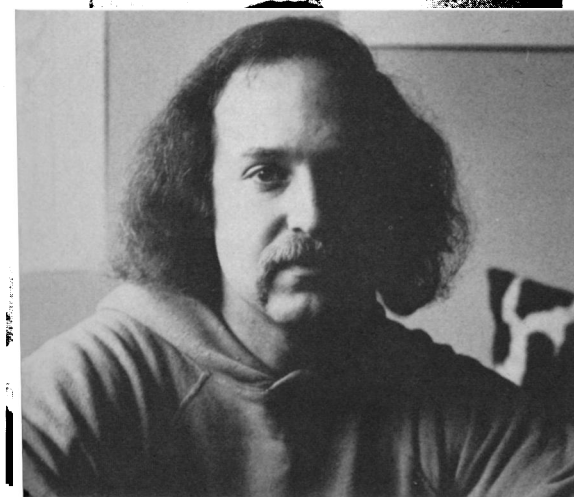
The subject poses frustrating pitfalls for anyone attempting an objective, independent evaluation. Little of the research has been published in the traditional scientific literature. Only a relatively small number of scientists have firsthand knowledge of it. Those who are experimenting often seem to disagree on even the most basic points. And a certain amount of verbal gobble-dygook by some of those who have described experiments or presented theories has made it difficult to sort out the legitimate scientific aspects from more metaphysical matters. Nevertheless, there seems to be enough to the subject to merit some serious attention.

The Kirlians report that their electrophotographs show certain points on the human body radiating light flares more forcibly than the areas around them and that these points correspond exactly to the 741 acupuncture points mapped out by the ancient Chinese. It is also reported that they have produced photographs showing that a plant is diseased before the physical symptoms of the disease appear.

Soviet investigator Victor Adamenko, who has worked with the Kirlians for many years, claims that he has been able to cut off as much as 10 percent of a leaf and still produce a photograph that shows light emanating not only from the portion of the leaf remaining but also from the missing section. Adamenko suggests there are so many energy sources in a leaf that cutting a small section away does not significantly reduce the ability of the leaf to maintain its energy pattern. American scientists have been unable to obtain the same result.

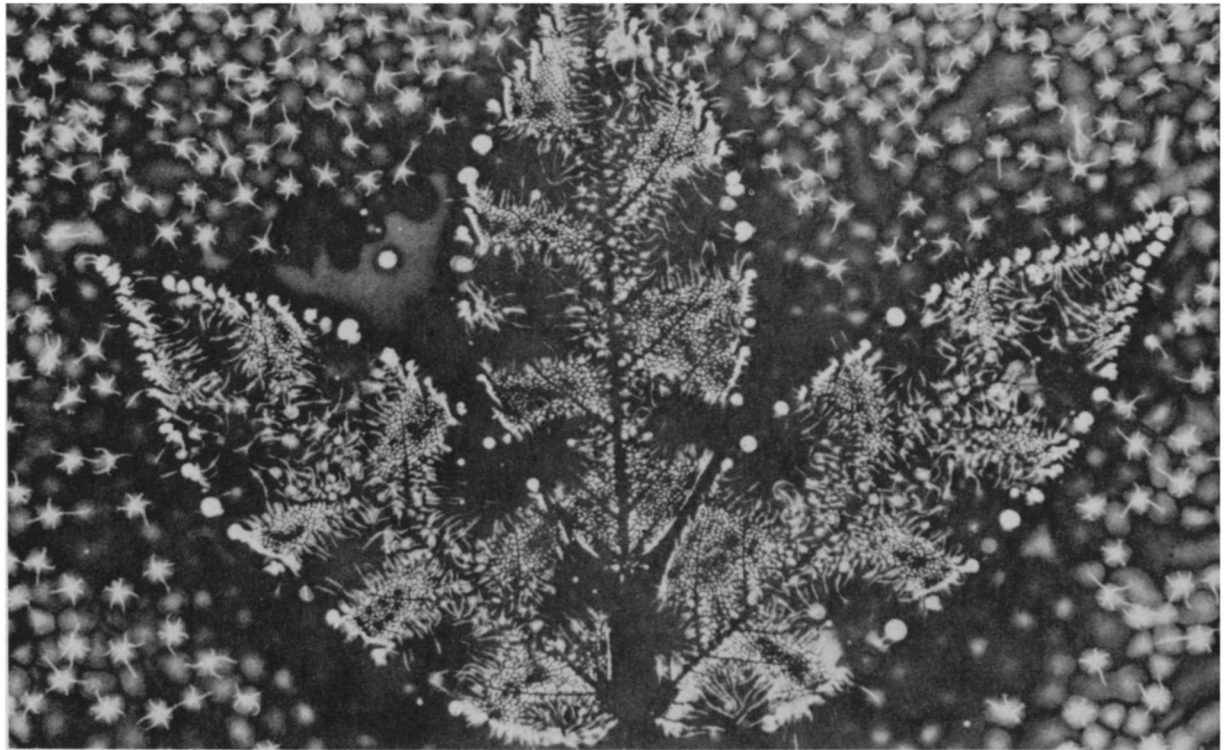


Tiller: Proposes a corona discharge.



Miller: Radiation is gas emission.

Kirlian photograph of leaf taken with a prolonged electrical pulse.



Milner and Smart

In the United States, material scientist William A. Tiller of Stanford University and medical psychologist Thelma Moss of the University of California in Los Angeles have produced photographs of freshly plucked leaves revealing light patterns surrounding the leaves that become distorted if the leaves are mutilated and gradually disappear as the leaves die. They speculate that this emanation may be a direct measure of the life processes occurring within a living organism.

Repeated experiments suggest that light emanations around fingertips vary with the emotional, physiological and psychic state of the person being photographed. Moss has photographed the fingertips of a medical student before, during and after the consumption of 17 ounces of bourbon. The emanations around his fingertips became increasingly brighter and rosier after each consecutive drink until he became "all lit up" and, shortly thereafter, ill. This experiment has been repeated by Tiller and psychiatrist Gerald G. Jampolsky of the Child Center in Kentfield, Calif.; their results corroborate those of Moss.

More puzzling are photographs taken of fingers of "faith healers"—persons who claim they can cure illness by

touching others. Often the person being treated by a healer reports a "heat" sensation in the area of the body touched. Pictures taken by Moss show that the glow around the healer's fingers is smaller than before healing, while the patient's emanations increase in size and intensity after healing. "It should be emphasized," she says, "that this phenomenon does not demonstrate healing; it simply seems to reveal a transfer of energy from healer to patient."

This is but a small sample of Kirlian photography experiments going on in the United States, Russia, and to a lesser degree, in England and South America. The simplicity and inexpensiveness of the Kirlian apparatus has encouraged experimentation by bona fide and amateur scientists alike.

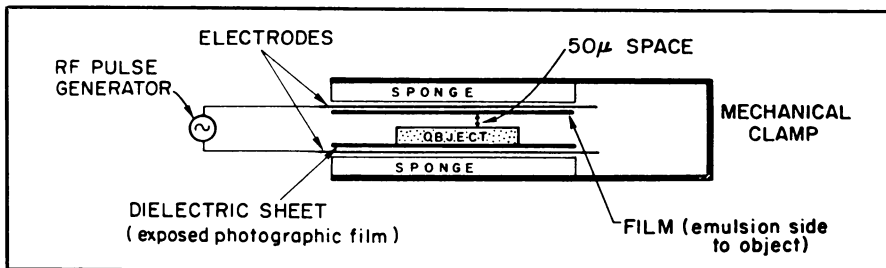
In general, the American photographic devices are modeled after the Russian ones but differ from one another in power source and experimental range of voltage and frequency used.

In the simplest Kirlian device, the object to be photographed is placed on film between two metal plates to which voltage is applied. For taking pictures of a portion of the human body only one electrode (metal plate)

is needed since the body acts as a ground. In other cases, a transparent electrode is used, and the film is placed outside the apparatus in a camera. Often a Tesla coil is used with the device; it is plugged into an electrical outlet and in turn rigged to the metal plates. The Tesla coil multiplies the voltage and the frequency of the electric field. If the current is of high frequency, it travels over the surface of objects rather than through them and is thus safer to work with. The exposure time depends on the film speed and the strength of the discharge current. When the current is turned on, in a darkened room, rays of light are readily seen issuing from the object's edges. The light is recorded by the film.

Radiation-field photography is not a new discovery. It dates as far back as Nikola Tesla (1856-1943), the inventor of the Tesla coil. With the coil, he made photographs showing sparks emanating from various parts of his body. At the turn of the century, an American and a Czech physicist also experimented with electrography. Again in the 1930's, American physicists studied corona discharge. However, little attention was paid to these photographs until the Kirlians accidentally rediscovered the process. Most earlier scientists felt that they were dealing purely with a corona discharge; the Kirlians were the first to consider the patterns of illuminances as "life activities."

"In living things," the Kirlians wrote, "we see the signals of the inner state of the organism reflected in the brightness, dimness and color of the flares. The inner life activities of the human being are written in these 'light' hiero-



William A. Tiller

In typical simple Kirlian device, the object is placed between two electrodes.

glyphs. We've created an apparatus to write these hieroglyphs. But to read them we're going to need help."

American interest in radiation photography was triggered three years ago by the appearance of the book "*Psychic Discoveries Behind the Iron Curtain*" by Sheila Ostrander and Lynn Schroeder. Several American scientists (among them Tiller; Moss; lawyer and inventor Kendall L. Johnson; psychiatrist Montague Ullman, director of the Maimonides Mental Health Center in Brooklyn; and psychiatrist Stanley Krippner, director of the Maimonides Dream Laboratory) found the accounts of Russian psychic research interesting enough to visit the Soviet Union and observe at firsthand what was going on. While there, they were given schematic diagrams of the Kirlian apparatus but were not allowed to actually see one in operation. Upon their return to the United States, several such devices were built.

Also leading to the interest in radiation photography is the current sympathy in some quarters toward subjects outside the areas of traditional science. The discovery of the apparent validity of ancient practices such as meditation and acupuncture has opened many minds to new ideas and broadened the perspectives of scientific research. But as to the exact nature of the phenomenon taking place in Kirlian photography there is little agreement among scientists.

Some ardent proponents of Kirlian photography feel that the emanations are none other than what ancient theosophical teachings call the "astral body," "energy body" or "aura" that surrounds the physical body.

A Russian physicist and investigator of Kirlian photography, Viktor Inyushin, explains the phenomenon in vitalistic terms. He believes the photographs reveal the "bioplasma body" of an organism—a previously overlooked state of matter made up of electrons and other subatomic particles that surround and interpenetrate living organisms. He states that it has specific spatial organization, is polarized and determines the form of the organism it penetrates. He associates bioplasmic energy with psychokinesis, acupuncture and similar phenomena still unexplained.

Jane H. Hu, electrophysiologist and director of research and education at the Acupuncture Institute and Research Center in Washington, says she is "very interested" in Kirlian photography. "It is direct evidence that shows the energy circulation in the body that coincides with the theories behind acupuncture and meridians. Whether or not this is an electrical or nonelectrical energy we do not know."

Other investigators are attempting to

explain the phenomenon from the viewpoint of traditional Western science.

Tiller says there is a "specific physical explanation called the streamer phenomenon of corona discharge that can account for all the observations made to date."

Electrons, emitted from the object, move to the positively charged plate. By collision, they ionize the air molecules. When the density of positive ions is great enough, they attract the electrons back to the positive ion cloud, producing recombination events that lead to the emitting of radiation. Nitrogen recombination gives rise to the emission of light in the blue and ultraviolet range. The light patterns thus produced, vary with the distribution of the electrical field which is in turn influenced by the physiological state of the person being photographed. The physiological state is governed by the emotional state. But he adds that although there is a physical explanation this does not mean that some unknown type of energy may not be intimately involved.

Richard Miller, a physicist and director of research at the department of parapsychology and parapsychology at the Experimental College in Seattle, is not convinced air ionization is the main process involved in Kirlian photography. He thinks the radiations are related to the normal discharge of gases from living organisms.

With photospectrometry, Miller and his colleagues have looked at the emission lines coming off the human body and have identified them as gases related to the phenomenon of pheromones (gases that contain communication signals, like odors). "Much human emotional interaction could depend on the exchange of pheromones," says Miller. "Of course, this goes on at a subliminal level—below the level of conscious awareness."

"Gas emissions are functions of the emotional state and are potential clues to what goes on inside the head, and may lead to accurate measure of human responses and health state. The Kirlian process gives us a handle to measure these states," concludes Miller.

Both he and Tiller agree that careful experimentation under well-controlled conditions is needed to evaluate the significance of the phenomenon. Says Tiller: "We have not been sufficiently careful experimentally in the past."

Though scientists do not clearly understand the phenomenon taking place in Kirlian photography, many are excited about its applications.

"Whatever it is," Moss says, "I'm interested in it because it reveals enormous differences in energy states in individuals and thus may have practical applications for treating diseases, alcoholics, for psychotherapy and for study-

ing people's interactions." She hails the discovery of Kirlian photography to be "as important as the invention of the X-ray machine. X-rays show what goes on inside the human body, Kirlian photography reveals what goes on outside the body."

Jampolsky is planning to take photographs of fingertips of children to see if he can determine when a child is daydreaming or actually concentrating on his books. He is also planning to do some work with dying patients to find how long emanations continue after death and if the photographs will reveal when a patient makes the unconscious decision to stop living. "Kirlian studies of persons in a hypnotic state show that unconscious decisions do affect the aura," he says.

Researchers James Hickman and Larry Amos of Sonoma State College in New Mexico are planning to take photographs of fingertips of normal and abnormal persons at a nearby mental hospital. Preliminary studies with Kirlian photography, Hickman says, indicate that it is possible to detect emotional disturbances.

Says Moss: "At this moment in time, it is impossible to draw any conclusions about this research, except one. Whatever these pictures reveal—corona discharge or bioplasma—the changes which have been observed to occur in organic materials demonstrate that a most interesting, still undeciphered story is being told. And there lies the challenge." □

. . . earthquakes

lieve that the number of 'false alarms' in predicting earthquakes may well be small."

The elaborate theory may not be precisely accurate, but, says one seismologist, "even if it is wrong it is valuable. It gives us something to measure."

One factor in prediction will certainly be the amount of available instrumentation, particularly if there is to be a practical prediction network covering most of the seismically hazardous areas in the United States, to say nothing of other countries. The only area now instrumented for any appreciable number of precursors, says Scholz, is Garm, which is equipped to monitor pressure-wave velocity, local seismicity, crustal uplifting and electrical resistivity.

Among the most important techniques now being developed to help catch quakes napping, according to Eaton, are ways of directly measuring the general level of stress deep in the rock. One approach, called pressure packing, has already been used at the Rangeley oil field in Colorado. A layer of a plastic material is placed around a hollow sleeve which is then inserted