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**COVER:** The Science News Photo of the Year for 1973 is almost inevitably Jupiter, photographed Dec. 1 by Pioneer 10 as it neared the planet. Far more than just another spectacular space picture, it represents the spacecraft's survival through the supposedly dangerous asteroid belt beyond the orbit of Mars, and marks the opening for mankind of the gate to the rest of the solar system. See p. 388. (Photo: NASA)

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# to the editor

## Explaining Kirlian photography

For some time we have been working in the area of Kirlian photography ('light of life' SN: 9/29/73, p. 202). It is our opinion that the Kirlian effect can be explained as a type of corona discharge whose characteristics are strongly influenced by the geometric configuration of the object being photographed as well as the detailed pattern of conductivity. Removal of the atmosphere surrounding the film quenches the corona discharge leading to photographs in which no "aura" is recorded. Reintroduction of the air reestablishes the "aura." Thus the light from the discharge exposes the film, but because biological materials are commonly used in Kirlian work, this photographic process is complicated by chemical interactions between these objects and the film.

As an example, we have found that when high frequency, high potential electric fields are applied to fresh biological materials such as leaves, large amounts of various ionic solutions are emitted. These fluids can play havoc with film emulsions causing spurious colors and patterns.

The details concerning our apparatus, experimental procedure and conclusions were presented at the California American Association of Physics Teachers fall meeting (Nov. 3). As indicated at that meeting it seems that concepts such as auras, energy bodies or bioplasmas are unnecessary and useless.

David B. Cooper  
Robert L. Alt  
Department of Physics  
California State College  
Dominguez Hills, Calif.

## The brine's the thing

I cannot resist adding my contribution to "It's All in the Name."

During my schooling at the University of Northern Iowa, there was a course for biology majors called biological techniques in which you learned how to prepare and preserve various biological specimens. Incredibly, the course was taught by a Dr. W. E. Picklum!

Students never failed to receive a chuckle as they passed by the fume-filled lab with the sign on the door: *W. E. Picklum.*

Thomas G. Rust  
San Antonio College  
San Antonio, Texas

## Go and catch a falling black hole

Are black holes, perhaps, the key to the riddle of entropy? Does the universe become steadily more pocked with these strange quirks of nature as eons flow by?

Possibly, then, after countless ages, the black holes devour each other, forming one massive black hole which upon reaching a critical mass, explodes in a single burst of all its accumulated energy. From that point the process of entropy could begin again, completing the cycle.

Another thought is that black holes are, as some have suggested, some sort of tunnels to alternate universes. In this case, our energy would be replenished from other universes, while that swallowed up in the black holes would feed them. This would support the theory of "continuous creation." Through the varying physical laws of different universes, the energy road could run downhill in both directions.

I have a feeling that the answers to a lot of questions will come from black holes, when and if we unlock their secrets.

Peter C. Gaffney  
Endicott, N.Y.

I have received your September 29 issue which carries the letter Louis Blazquez wrote on behalf of his science class. I understand that the hypothetical "cosmic egg" formed indeed a "black hole" and that in order to explain the "big bang" one must assume a process by which at least half the egg's mass was suddenly transformed into radiation, that is, energy. I wonder what process this could be? Does anybody know?

Juan G. Lowenstein  
Denia, Spain

(We don't. Do any cosmologists have theories?—Ed.)

In "The case for a black hole in Cygnus X-1" (SN: 12/1/73 p. 341), I find the term "black hole" not descriptive of the astronomical phenomenon, since hole connotes emptiness. I suggest "black extinct star" or "black dead star" as more descriptive.

Ernest O. Kean  
Bronx, N.Y.

(But it's called a black hole because you can throw endless amounts of matter into it.—Ed.)

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