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## Letters

### Up there in the microwaves

Stefi Weisburd attempts to "set the record straight" in her reply to Mary Heussenstamm's letter about cancer and power lines ("Power-lines," SN: 5/19/84, p. 307). These lines do in fact "operate" at 60 Hz in that they carry power at that low frequency. They do, however, radiate energy at many higher frequencies. Anyone who does not believe this need only drive under a high voltage line with his car radio turned on.

The source of the radio-frequency noise is corona discharge. As the alternating line voltage passes near its maximum during each cycle, the corona discharge begins abruptly. It stops abruptly as the voltage swings back toward zero after the peak is passed. This nonlinear current flow causes energy to be radiated not just at 60 Hz, but also at all harmonic multiples of 60 Hz far into the RF range. How far up the spectrum this radiation goes is certainly subject to measurement. If the corona's risetime is very short, i.e. less than a nanosecond, there is likely to be

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Cover: While an increasing number of researchers are studying artificial intelligence (ways to give machines a humanlike reasoning ability), a few are starting to look at "artificial imagination"—giving a machine the ability to show intuition and to create original designs. (Cartoon: Sidney Harris)
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quite a bit of energy in the microwave spectrum.

Availability of energy from corona discharge at very short wavelengths is suggested by the fact that corona discharges in power lines (1) ionize the air nearby and (2) emit visible light. Consider further that a power line operating at 60 Hz with a nonlinear current flow caused by corona discharge has blocked out a radio signal four decades above it in the frequency spectrum at 600 KHz. Another four decades and we are at 6 GHz, right up there in the microwaves.

I fully agree with Ms. Heussenstamm, and I think she's right about suggesting this be looked into. I found it very interesting that page 308 of the same issue had an article about fallout-caused cancers, a subject that had received similar neglect as recently as 10 years ago.

Douglas W. Raymond  
Orinda, Calif.

### Slinky speculations

Scientific work is sometimes slightly foreshadowed by speculations. An example is

the work on vibrations of DNA by E.W. Prohovsky who began thinking about the topic a decade ago ("Dissecting the Dance in DNA," SN: 6/9/84, p. 362).

The metaphysical question "Does consciousness depend on the helical DNA molecules, vibrating like the toy called Slinky?" was asked by me in ZENITH (1967, Hilary term, p. 16). ZENITH is a scientific journal published by Oxford undergraduates. [And Hilary term is the semester that begins in January.] A suggestion was made by Peter Fong (PHYSIOL. CHEM. AND PHYS. 1, 1969, 24-41), that memories might be coded along RNA molecules by bases projecting from the coils of the helix, and he suggested a fairly specific mechanism for this. These projections would affect the modes of vibration of the molecule, and the proteins to which it could give rise.

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