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## Letters

### Microwaves and DNA

"Science News of the Year" (SN: 12/22 & 29/84, p. 400) mentioned the finding by Swicord and colleagues of possible resonant absorption of microwave energy by DNA, "a possible nonthermal mechanism by which this radiation could cause low-dose biological effects."

But their results also indicate that the irradiated molecule would quickly release energy to the surrounding fluid. A simple calculation shows that the amount of energy that can be added to a DNA molecule by microwave fields of reasonable intensity is several orders of magnitude smaller than the random thermal energy it already possesses. Any changes produced in the molecule by microwave energy would be overwhelmed by random thermal agitation.

This point was forcefully made by one of the participants in the study, C. C. Davis, at a meeting in Florence last August. If the Swicord results are correct (and I think the jury is still out),

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Cover: Nuclear technician uses "hot cell" to work with radioactive material remotely. A reactor under design at Argonne National Laboratory would use similar hot-cell facilities in the on-site reprocessing of its nuclear fuel. The goal of this and related research is to make breeder reactors more commercially attractive in the United States. (Photo: Courtesy Argonne)



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their significance would be more as a startling spectroscopic finding about the behavior of DNA in solution than as a possible mechanism for biological effects of low-level microwave energy.

*Kenneth R. Foster*  
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Philadelphia, Pa.

### War: Commercial or chaotic?

As an historian, I wish to take issue with Alvin M. Saperstein's view of war as a "breakdown in predictability" ("The Chaos of War," SN: 1/5/85, p. 13). President Woodrow Wilson, who ironically pushed us into World War I although he ran in 1916 on an anti-war platform, wrote later that the war was "a commercial one." The seizure of the losers' colonies should be proof of the cause

of the war. Wars, even the religious ones, have economic roots. The present ideological war between the "superpowers" is another in the chain.

*Leonard Boyer*  
Flushing, N.Y.

### 'Prolonged torture'

It appears that SCIENCE NEWS gives tacit approval to the scenario of the artificial heart ("New life for the artificial heart," SN: 12/1/84, p. 342). I am astonished that someone among your staff doesn't recognize that such a ritual could never succeed except in prolonged torture for the recipient. The simple elementary reason for the failure is that there is no way to connect this plastic or aluminum "heart" to the central nervous system of the patient.

*Arden D. Zimmerman, D.C.*  
San Jose, Calif.

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