very likely be promotion of your paper by the referee. The impersonal reading of the paper by a host of silent readers is a problematical tertiary channel. I am not claiming that you publish *only* to reach the referee. You also do it so that you will yourself be able to look it up at the library, when it gets lost at home.

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## Units of frequency

I wish to support the letters of James Rainwater (September, page 15) and Grote Reber (May, page 122). I have been teaching physics since 1960 and find the units for frequency (a cycle per second or vibration per second) much more useful from the students' point of view since they can easily conceptualize this definition. "Hertz" is just another word and stands in the way of learning. The same can be said for the pressure unit Pascal and the unit for the B-field Tesla. A Newton/$m^2$ and Weber/$m^2$ are easy to conceptualize. I think we have taken some backward steps from 1960. All I can say about the Hertz is the old Latin idiom "*rara avis*," which means "strange bird."

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## Legality of nuclear freeze

There has been considerable attention lately given to the grassroots movement in support of a mutual freeze on nuclear weapons by the US and the Soviet Union. As a physicist, now working on a state legislative staff, I have no special technical expertise in nuclear arms limitation, although I do support the resolution as a sensible first step toward reducing the danger of cataclysmic nuclear war.

I would, however, like to answer one legal objection that has been raised to the freeze resolution: that it is an inappropriate subject for a local or state government to address. National defense is indeed a constitutional responsibility of the national and not the state or local government.[1] Although this kind of resolution is not a frequently used legislative power, it is a means of communication from the people of the state or town to the Congress and the President, through the elected representatives nearest to us. As such, it is an exercise of the constitutional right of free speech and the fundamental power of the people.[2,3,4] Our representatives have a responsibility to represent us as constituents and help get our views heard in Washington. Of course, it is then up to the national government to weigh our messages and decide what to do.

Based on an understanding such as this, the Maine Legislature on 11 March 1982 become the fourth state to endorse a resolution requesting the Congress

> . . . . to take immediate action by calling upon both the US and the Soviet Union to adopt a mutual freeze on the testing, production and deployment of nuclear weapons, completely verifiable by whatever methods necessary to ensure compliance by both nations, . . . .

Similar resolutions are being introduced in many other states and in the Congress, as the nuclear arms debate continues.

### References

1. US Constitution, Article I, Section 8, "The Congress shall have power to . . . . provide for the common defense and welfare of the United States . . . . To declare war . . . . To raise and support armies . . . . To provide and maintain a navy;"

   US Constitution, Article I, Section 10

   "No State shall enter into any treaty . . . . No State shall, without the consent of Congress, . . . keep troops, or ships-of-war, in time of peace, enter into any agreement or compact . . . . with a foreign power . . . ."

   US Constitution, Article II, Section 2

   "The President, shall be commander-in-chief of the army and navy of the United States . . . ."
2. US Constitution, First Amendment "Congress shall make no law . . . . abridging the freedom of speech, . . . . or of the right of the people peacably to assemble, and to petition the government for redress of grievances."
3. Constitution of the State of Maine, Section 4 "Every citizen may freely speak, write and publish his sentiments on any subject."
4. Constitution of the State of Maine, Article I, Section 2: "All power is inherent in the people; all free governments are founded in their authority and instituted for their benefit; they have therefore an unalienable and indefeasible right to institute government, and to alter, reform, or totally change the same, when their safety and happiness require it."

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*4/82*

## Frustration in physics

The letter by Serge Galam and Pierre Pfeuty (April, page 89) about the word "frustrated" is surely much too agitated. I know nothing about the recent use of the word in physics, but "frustrate" (and derivatives) has a history of several centuries as a perfectly ordinary English word, meaning to disappoint, thwart, balk, nullify, defeat, counteract, and similar meanings. The Oxford dictionary gives dozens of quotations.

The word even occurs in the second verse of the British national anthem, "God Save the Queen" (a verse seldom sung, for good reason):

> . . . Scatter her enemies
> And make them fall,
> Confound their politics,
> Frustrate their knavish tricks . . .

Even in physics, "frustrate" is a lot older than Galam and Pfeuty give it credit for. In the phenomenon of total internal reflection at a glass–air interface, you can restore the transmission of light by bringing a second glass surface near to the first, but not touching it. When I was a physics student many years ago, this effect was called "frustrated internal reflection." It seemed a sensible name.

Whether or not "frustrate" is the best choice for its current use in physics, it is a shame to be robbed of a good word simply on pop-Freudian grounds. Some people might call that a knavish trick; I hope it is frustrated.

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## Corrections

January, page 40—In box "Advice to an entrepreneur," line 12, "rungs" should read "rugs."

March, page 64—The editors mistakenly substituted the name of Konrad Lorentz for that of Hendrik Antoon Lorentz in the review of Albert Einstein's Special Theory of Relativity. We are grateful to A. J. Kox (University of Amsterdam) for calling our attention to this error.

April, page 43—Reference 1 should read R. H. Stuewer (instead of H. Steuwer).

May, page 25—Captions were omitted from the photos. The upper photo is a transmission photomicrograph of a liquid-crystal sample between crossed polarizers. The colored areas are birefringent regions of the layered, smectic-A phase nucleating from the isotropic liquid phase as the sample is cooled. (Photo by J. Goodby, Bell Labs.) The lower photo shows a diffraction apparatus from Bell Labs used at the Stanford Synchrotron Radiation Laboratory for structural studies of free-standing liquid-crystal films. (Photo by R. Pindak, Bell Labs.) □