

mentioned by Abelson. Moreover, the competitiveness of U.S. exports is critically dependent on their prices. Because energy is a major component in the manufacture of most U.S. exports, not only would the American oil consumer lose in the oil tax scheme but the United States would essentially be exporting its higher energy costs in the form of finished products. American competitiveness in the international marketplace would diminish, and the protectionist argument gets turned on its head. Certainly, the protectionists would not argue for a tax on U.S. exports.

TODD A. WATKINS  
John F. Kennedy School of Government,  
Harvard University,  
Cambridge, MA 02138

### Science Unfettered

Barry D. Greenberg's enlightening etymological explanation of "Mazel tov" (Letters, 14 Nov., p. 803) is indisputable if incomplete. The Babylonian Talmud teaches "Ayn Mazol L'Yisrael." The careless translator renders this: "The people of Israel have no luck." The careful student correctly trans-

lates: "The people of Israel have no constellation," meaning that they are not idol worshippers—not even of heavenly idols. Here then, a harbinger of science unfettered.

ELY E. PILCHIK  
1025 South Orange Avenue,  
Short Hills, NJ 07078

### Berry's Phase: Other Observations

One of the fascinations of physics is the frequent appearance of the same idea in widely divergent subdisciplines. A beautiful example is Berry's phase (Research News, 24 Oct., p. 424) with import for the quantum Hall effect, gauge theories, molecular physics, and optical physics. An unfortunate consequence of the diversity is that followers of one discipline may be unaware of closely related work in another.

Not only were the fractional pseudorotational quantum numbers associated with Berry's phase predicted by Longuet-Higgins in 1958 (1), but consequences of fractional quantization were observed within a few years of that prediction in experiments on color centers in alkali halides (2, 3). More extensive results were reported on transition

metal impurities in a variety of hosts during the late 1960s and 1970s (4). The color center work (2) involved optical studies of the R center, a cluster of three F centers forming an equilateral triangle. The F center, an electron trapped by the positive charge associated with an anion vacancy in an ionic crystal, is a solid-state analog of the hydrogen atom. The R center is thus the solid-state analog of the H<sub>3</sub> molecule; it is amusing that Na<sub>3</sub>, another analog of H<sub>3</sub>, was the free molecule in which Delacrétaz *et al.* (5) established the fractional quantization in the experiment discussed in the Research News article.

ROBERT H. SILSBEE  
Department of Physics, Cornell University,  
Ithaca, NY 14853-2501

### REFERENCES

1. H. C. Longuet-Higgins, U. Öpik, M. H. L. Pryce, R. A. Sack, *Proc. R. Soc. London* **244**, 1 (1958).
2. R. H. Silsbee, *Phys. Rev.* **138**, A180 (1965).
3. D. C. Krupka and R. H. Silsbee, *ibid.* **152**, 816 (1966); H. R. Fetterman and D. B. Fitch, *Solid State Commun.* **6**, 501 (1968); J. A. Davis and D. B. Fitch, *ibid.*, p. 505.
4. F. S. Ham, *Phys. Rev.* **166**, 307 (1968); G. G. Setser, A. O. Barksdale, T. L. Estle, *Phys. Rev. B* **12**, 4720 (1975); H. Bill, in *The Dynamical Jahn-Teller Effect in Localized Systems*, Yu. E. Perlin and M. Wagner, Eds. (North-Holland, New York, 1984), p. 709.
5. G. Delacrétaz, E. R. Grant, R. L. Whetten, L. Wöste, J. W. Zwanziger, *Phys. Rev. Lett.* **56**, 2598 (1986).

## SCIENCE, ARMS CONTROL, AND NATIONAL SECURITY FELLOWSHIPS AAAS Invites Applications

The American Association for the Advancement of Science invites applications for two Science, Arms Control, and National Security Fellowships. The Fellowship term will be for one year and will begin on 1 September 1987.

The Fellowship program will provide a unique opportunity for outstanding postdoctoral to mid-career scientists, engineers, and other appropriate scholars and professionals to participate directly in the policy-making process in the area of arms control and national security. Fellows will work in appropriate executive branch agencies of the federal government, congressional committees or support agencies, or non-profit institutions in Washington, D.C.

The AAAS will guide the placement process, provide an informative orientation program, and coordinate frequent seminars on a variety of topics related to arms control and national security.

The 1987-88 Science, Arms Control, and National Security Fellows will receive a stipend of up to \$30,000 and a nominal relocation and travel allowance. Applications are invited from candidates with some experience in the arms control/national security field and primary expertise in any area of engineering; the physical, biological, behavioral, social, or policy sciences; or science-related professions. Minority and handicapped candidates are especially encouraged to apply.

For application requirements and additional information, contact:

Dr. W. Thomas Wander, Senior Program Associate  
Science, Arms Control, and National Security Fellowships  
American Association for the Advancement of Science  
1333 H Street, N.W., Washington, D.C. 20005

THE DEADLINE FOR THE RECEIPT OF ALL  
APPLICATION MATERIALS IS  
FEBRUARY 23, 1987.

# DRUGS OF THE FUTURE

Yours may be?  
You are an independent  
investigator.  
You have discovered a new  
biological or chemical compound.  
We are a Swiss financial  
institution and have the know-how  
and the means to develop your  
compound into a new drug.  
Please send preliminary  
information to:

DEBIOPHARM S.A.  
Rue du Petit-Chêne 38  
1003 LAUSANNE, SWITZERLAND