

## letters

'70's rather than France in the '30's. It seems to me that the main problem that we face today is the domination of the decision-making apparatus in the physics community in the US by a small group of individuals who came into prominence during the Manhattan Project era or slightly after, and are now unwilling to relinquish their power to make way for new blood and new ideas. Jean Perrin where are you now that we really need you?

ROBERT JOEL YAES

Memorial University of Newfoundland  
Newfoundland, Canada

7/3/79

## Bathroom mystery

I was fascinated by the code number on my White Cloud bathroom tissue, 2998MC2, since the first four numbers suggest the speed of light in cm/sec, and the last three symbols suggest  $mc^2$ . I assume that this is not a coincidence. Either this is Proctor & Gamble's way of celebrating Einstein's birthday or it is a coded message by a physicist pleading "Help. I'm trapped in the White Cloud factory!" Who done it?

HOWARD GEORGI

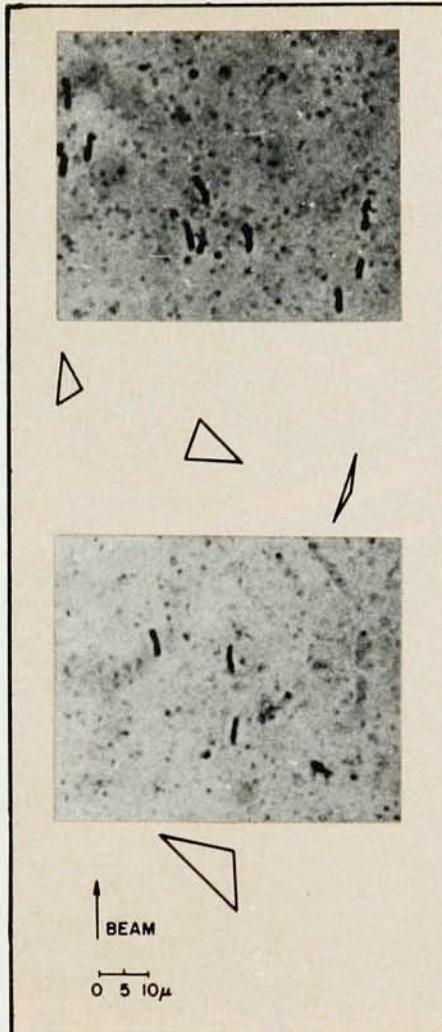
Harvard University  
Cambridge, Massachusetts

3/19/79

## Molecular Ions

We enjoyed reading your well-written news report: "Fast ion beams reveal structures of molecular ions" (May, page 17). In fact, one of us (Z.V.) had the pleasure of collaborating with Don Gemmell in many of the studies described in the article. At the Weizmann Institute we started a research group (after a visit of Don Gemmell in 1975) on similar lines and made some contributions of our own.<sup>1,2</sup>

We believe that the picture of the "state of art" conveyed in your article cannot be complete without mention of the special experimental technique used by us for the structure determination of the  $H_3^+$  molecule (in ref. 4 of your article). Nuclear emulsions were employed to record the fragments of  $H_3^+$  dissociations. The photographs display tracks of 700-keV protons which appear in clusters of three. The three protons result from explosion of a single  $H_3^+$  molecule in a 100-Å-thick carbon foil. The unique feature of the "snapshot" of a molecular explosion is that the three-body correlation is immediately apparent. For example, it is enough to observe one triangular set of proton tracks to conclude that the  $H_3^+$  structure is nonlinear. This is the only experiment in which all three exploded



components were simultaneously recorded. The three-body correlation plays an important role when events like those in the picture are statistically compared with theoretical hypotheses of molecular structure.

An extension of this technique to ions other than protons and to molecules containing more than three atoms has been made possible by our development of a new type of silicon detector for particles, which will soon be used to measure a variety of molecular ions.

### References

1. A. Faibis, G. Goldring, Z. Vager, Phys. Rev. Lett. 39, 695 (1977).
2. A. Breskin, A. Faibis, G. Goldring, M. Hass, R. Kaim, Z. Vager, N. Zwang, Phys. Rev. Lett. 42, 369 (1979).

ZEEV VAGER  
GVIROL GOLDRING  
The Weizmann Institute of Science  
Rehovot, Israel

5/30/79

I wish to remedy an omission in the news story "Fast ion beams reveal molecular-ion structure." In listing the collaborators involved in our work at Argonne, the name of Zeev Vager (Weizmann Institute, Israel) was unfortunately left out. Vager

continued on page 102

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15

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## POLARIZED ELECTRONS, VARIABLE MASS, AND ELECTROMAGNETIC RADIATION

by

Ralph Sansbury

The hypothesis is advanced that the electron is susceptible to polarization and that the apparent magnetic force of a moving electron is attributable to polar moments of the electron. A force-at-a-distance theory of electromagnetic radiation is derived from the hypothesis based on the variable capacitances of the moving electrons in the receiving antenna as a function of distance from the sending antenna. Other implications proposed: the photoelectric effect as a resonance phenomenon; hydrogen emission frequencies as the average in each case of orbital frequencies delimiting a specific orbital transition; the circumvention of the problem of a moving electron exerting a delayed force on itself. Support is given in terms of an experiment involving a variable resistance receiver antenna with adjustable reactance and reinterpretations of well known experiments of the past.

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## letters

continued from page 15

spent a year at Argonne (1975-76) during the initial phases of our work and has returned to Argonne as a Summer Visitor in each subsequent year. His contributions to this long-term collaboration have been of crucial importance in the progress of our work. In addition to participating extensively in the experimental program, Vager has played a central role in developing a theoretical understanding of the results. I very much regret the omission of his name in your article and hope that publication of this letter will serve to correct the error.

DONALD S. GEMMELL

Argonne National Laboratory

6/6/79

## Target designer

I was very pleased to see Rex Booth's ingeniously conceived and executed high-current target for production of high-intensity D-T neutrons on the cover of PHYSICS TODAY for April. That was well-deserved recognition for innovative effort on Rex's part, which extends over more than a decade. But by the same token, I was keenly disappointed to see no reference to Rex Booth's name whatsoever!

His role in the development of that target is attested to by a long list of publications covering the evolution of the design you pictured on the cover.

LAWRENCE CRANBERG

Austin, Texas

5/8/79

## Soviet regulations

Our organization feels that a comment by Benjamin Levich (May, page 114) that visitors to the USSR should not violate Soviet law by bringing in religious books should be more fully explained.

Personal religious books and items for the tourist's use can be brought in. Visitors should be aware that they may be told they are violating Soviet law when they are not, and should make an effort to know something of the regulations before they leave for the USSR.

GLENN RICHTER

Student Struggle for Soviet Jewry  
New York, N.Y.

5/28/79

## Association: Omega

In bed a million fragmentary things  
the rolling, discontented surf  
lashing its whip, unintelligible  
somewhere a radio scraping the air,  
half-words, birdsong,

humming to itself  
machinery in the night  
skirting my intelligence, too fast  
for sorting, ushered down to the general  
din, the accepting sea of noise

4° Kelvin

the static singing of the universe,  
the music of the spheres

struck up  
with the Big Bang,  
time's explosion,  
four odd billion years  
ago, when undifferentiated matter  
splintered into multiplicity,

an overtone still waiting in the air

reminding us  
of our reception  
at the end

when everything is coined back down  
into the primal fury  
of degenerate matter

even light, the life-  
blood of the universe,  
impeded in its flow,  
coagulating in the absolute  
zero of the blue

a bruise where nature stood,  
the grave of former worlds

DAVID PAYNE

Kill Devil Hills, North Carolina

## Science for developing nations

With reference to Michael Moravcsik's guest comment (May, page 9), I would like to pose a question in a devil's advocate vein. Namely why should the whole world be modeled according to US and Northern Europe's idea of development? Even within the lofty confines of pure science it seems arrogant for our generation to try to maximize exploitation of brain power everywhere. We know what the same type of initiative can be regarding other types of exploitation! Are we right in our philosophy? Perhaps the preservation of resources via the "underutilization of the available human brainpower" that Moravcsik decries goes hand in hand with the preservation of vast natural resources such as the Amazonian forests or the North Canadian supply of fresh (uncontaminated?) water as "natural selection" mechanisms to ensure the survival of the human race beyond the decline of today's "advanced world" whenever that happens.

E. J. ANSALDO

Saskatoon, Saskatchewan

5/25/79

THE AUTHOR REPLIES: Ansaldo's question is one that is often asked by people of certain persuasion in the sci-