letters

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As at ORNL and elsewhere, we have begun a program to evaluate the various elements that make up the US electrical energy consumption. Our initial efforts have been directed toward the examination of electricity use in the residential sector. This sector was chosen because it has a substantial share of total consumption ($\approx$30%), has been growing at an exponential rate slightly faster than total electrical energy, is well documented in statistical abstracts, and has the property mentioned by Culler and Harms that increases in electricity costs would probably not "significantly effect consumer use of power for 'gadgets'." The results of this investigation, although not the final word, are that Rosenstock's "instinct" was closer to the mark than Culler and Harms's "faith." The study indicated that, if we take into account the natural saturation of the major household electrical appliances, a factor of approximately two increase in residential electricity consumption would occur by the year 2000. This is in contrast to a factor of eight increase predicted from the straight-line (logarithmic) extrapolation. The study also showed that further savings could be made if energy-conserving policies were instituted, without affecting the "quality of life." For example an optimum eleonomic use of insulation would cut the fuel expenditures for heating approximately in half. (J. C. Moyers, ORNL-NSF-EP-9, 1971.)

The above results do not imply that there is no need for new energy sources or that conventional fuels are not limited in supply. However, they do point out the importance of correctly evaluating the magnitude of the immediate problem. The study also indicates that we may have time to do the scientific studies required to bring the longer range, environmentally more desirable, energy sources, such as solar and fusion energy, to fruition.

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Theories of gravity

I read with interest Clifford Will's summary (October, page 23) of the present status of general relativity and other theories of gravitation. However, the situation with regard to perihelion shifts may be more complex than he imagines. A fourth cause of orbital precession may be associated with a gravitational Doppler effect (if it exists). It has been shown[1] that a velocity-dependent gravitational potential, in a reasonable form, can account for a large part of the anomalous advance of the line of apsides of the planet Mercury. The same approach is also capable of producing an expression for the deflection of light by the sun similar to that obtained from the general theory of relativity.

Reference

1. M. Surdin, Proc. Camb. Phil. Soc. 58, 550 (1962).

L. A. KING
London, UK

Resonances critic

The editors of PHYSICS TODAY have done much to bind American physicists into a cohesive community. That purpose is ill-served by publication of the humorous contribution from Richard Robiscoe and others (January, page 101). The slurs in this piece outweigh its cleverness. There are many Northern-trained physicists such as myself whose relations with a Southern employer or prospective employer have been strained by real, carefully reasoned differences in outlook. Both parties in these situations are ill-served by the publication of such slurs and ridicule. I am hurt that my friends at PHYSICS TODAY would contribute to this problem.

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New Math and Physics

The decline in physics enrollment has occurred at a time to suggest that it was caused (at least in part) by the introduction of the "new math" in elementary and junior-high schools. Does anyone have data sufficient to test this hypothesis?

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Corrections

February, page 24—The equation in the second column, third line from bottom, should read $\int_S C\,dx = 1$

Page 26—The fifth line in the first column should read "rotation through angle ωt in the (q,p). . ."

Page 29—The second part of the equation near the bottom of the first column should read

$$\phi(p,q) = [2p - 1, (q/2 + 1/2)] \quad \text{if } 1/2 < p \leq 1$$

Page 29—The missing reference 17 (see page 28, top of third column) should read "G. Gallavotti, University of Naples preprint." □