and at the top of a slower-moving class the next. Several schools in the Cleveland Heights school system have been using this grouping system for several years.

The system seems complicated at first glance, but Sparks insists that its benefits overwhelm any initial confusion. He condemns the normal track system as a disaster, noting, "If a child stays in the same group for more than a year, he begins to feel irrevocably locked into the system, and sees no hope for a change. This can have a stifling effect on his aspirations." He believes teachers, too, would find the change stimulating, particularly those who instruct the bottom-level classes.

Perhaps the key to Sparks' overall success as an inventor and teacher is that he cultivates flexible and creative thought without abandoning the framework of reality. He readily acknowledges the "test-taking attitude" all students must have to survive, but he makes clear to his classes that the ability to distinguish right and wrong quiz answers will not suffice forever. "Once you get out of school," he warns, "people will expect you to think."

"For me, education is the growing of minds, including attitudes. I have begun to think of teaching now as leading people to see and helping them learn how to lead themselves to see. An internal response which has been growing with some surprise and disbelief is the feeling, 'I am a teacher.' It is an exhilarating feeling." □

ChE letters

COMMENTS ON FAHIDY PAPER

Sir:

Concerning Professor Fahidy's article in the Spring 1981 issue. He has his biases, ably expressed, and I have mine, well over toward the numerical end of the applied-math spectrum. Both of us, however, should be careful of over-kill.

I doubt seriously his statement that a Legendre expansion

> **"would be typically introduced by discussing in a class lecture the steady-state temperature distribution in a homogeneous hemisphere whose surface is maintained at a constant temperature and whose base (equatorial plane) is insulated."**

The solution to such a problem is, of course, $T(r,\theta) = T_o$ or, in dimensionless form, $u = 1$. Lest anyone imagine that the author had in mind an axisymmetric pattern of constant surface temperature, the boundary condition $u(R,\theta) = 1$ is explicitly stated. Perhaps Professor Fahidy is merely using this problem as a novel way of demonstrating that certain infinite sums of weighted Legendre polynomials must add up to unity or that, if you get lucky, certain infinite series will degenerate to one term. His purported "solution" describes some very different problem with a mysterious zero at the center. Curiously, the problem is well posed in verbal form, with Dirichlet or Neumann conditions at every point on the surface of the hemisphere, but the mathematical equivalent has too few boundary conditions.

If he's not more careful, Professor Fahidy will give special functions a bad name.

DAVID B. MARSLAND
N.C. State at Raleigh

FAHIDY RESPONDS

Dear Editor:

The following is my response to Professor Marsland's comments:

Professor Marsland would be happier, I presume, if the hemisphere problem were treated using the more general boundary condition $u(R,\theta) = f(\theta)$. When the simple $f(\theta) = 1$ condition is posed, his intuitive solution is correct; however, algebraic manipulations are simpler in this case without much manipulative encumbrance. This specific problem is a standard exercise, (see e.g. Kersten: Engineering Differential Systems, McGraw-Hill 1969, No. 5, 33, p. 106). The fact that certain infinite series possess unity as their sum is a rather useful piece of information and, contrary to Professor Marsland's statement, degeneration to a single term is a matter of structure, not luck. Zeros, by no means mysterious, in potential theory do not hinder a fairly wide application of the theory and Professor Marsland would find several books (e.g. Dettman: Mathematical Methods in Physics and Engineering. McGraw Hill 1962, 1969) a delightful counterproof to his belief. As for my ability to "give special functions a bad name," there is little fear: much more brilliant mathematicians than I ever can hope to be have already established their good name.

T. Z. FAHIDY
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