evaluated. It is one of the more interesting game pieces on the board.

The real, long-term effect of SDI on this conflict between the USSR and the United States has yet to be seen or evaluated. It is one of the more interesting game pieces on the board.

I certainly agree that survival is desirable; to me that is the name of the game, but beyond that, one last word: The USSR has no God. As Malcolm Muggeridge said, "When mortal men try to live without God, they infallibly succumb to megalomania, or erotomania, or both." The Soviets have officially chosen megalomania. Hence, our present situation exists. Do we resist them or join them? I say resist them in ways that they understand.

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8/86

'Physics classroom revisited'

It was with great interest that I read "The physics classroom revisited: Have we learned our lesson?" by George Pallrand and Peter Lindenfeld in the November 1985 issue (page 46). However, based on their review of the various reforms, from those inspired by Sputnik to their own production of modules, it appears that the most germane questions have not been asked. The issues are:

▶ What is the purpose of formal education in the United States?

▶ What is the purpose of science education in general in the United States?

▶ In particular, what is the purpose of physics education within the realm of science education?

It seems rather silly to begin to consider problems such as dull or ill-prepared teachers, performance ("as quantitatively measured by . . .") conscious administrators and general anti-academic attitudes until these questions have been answered. My best answers to the three questions—both as a basis for synthesizing a physics course and as a focal or starting point for some future argument or discussion—are:

▶ The purpose of formal education for the first 12 years is twofold: First, the student should be brought gradually and systematically from a point of pure imitation and instruction (first grade) to the point of self-education (senior high school). As the student progresses to the later high-school years, he has to accept some of the responsibility for learning, questioning and understanding in each course. Second, this education should prepare high-school graduates to work as productive members of a democratic society—thinking for themselves, making decisions on candidates for political office, understanding arguments on foreign and domestic policy and so forth.

▶ The purpose of science education in general is certainly to help students make political decisions in a highly technological age, but more than that, science education must answer—or give the student enough knowledge to answer—questions about the universe in which we live, to understand as best he can his own existence and that of the world.

▶ Physics has, I believe, several purposes. Physics is that branch of science that teaches one about the physical world and its processes. What specific uses will people who take a physics course in high school make of the content of that course? Some students intend to continue their formal education in college; some not only will go to college but will pursue a major in physical science; and for some the high-school course will be the final course in science. Any course or sequence of courses developed for use in the high schools should focus on the needs of all three student groups. To discuss the content of such courses and the best approach to teaching them is beyond the scope of this letter.

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11/85

Polarized scattering

In your Search and Discovery story entitled "Polarized scattering data challenge quantum chromodynamics" (August 1985, page 17), your reporter described the dispute between Nathan Isgur and Stanley Brodsky about the applicability of perturbative methods of quantum chromodynamics to exclusive channels of deep inelastic reactions. I would like to remind both your readers and the two parties involved in the dispute about what the empirical evidence shows.

I showed[1] several years ago that single-particle inclusive production data from proton–proton collisions display scaling-violation behavior very similar to the scaling-violation behavior observed in the single-particle inclusive production data from e^+e^- annihilation. In quantum chromodynamics the scaling-violation behavior of single-particle inclusive production data from e^+e^- annihilation is explained by perturbative methods in the same way as the scaling-violation behavior of deep inelastic lepton–nucleon scattering, whereas the single-particle inclusive production from proton–proton collisions is dominated by the confinement process and is out of the reach of perturbative methods. Therefore, the observation of reference 1 casts doubt