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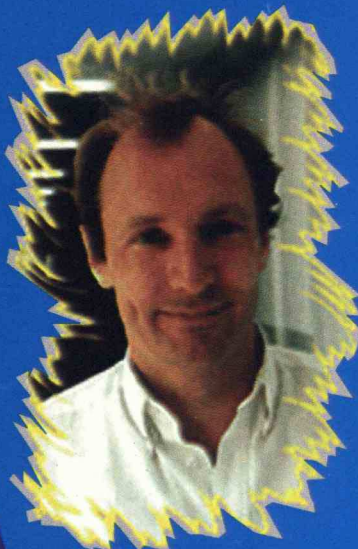
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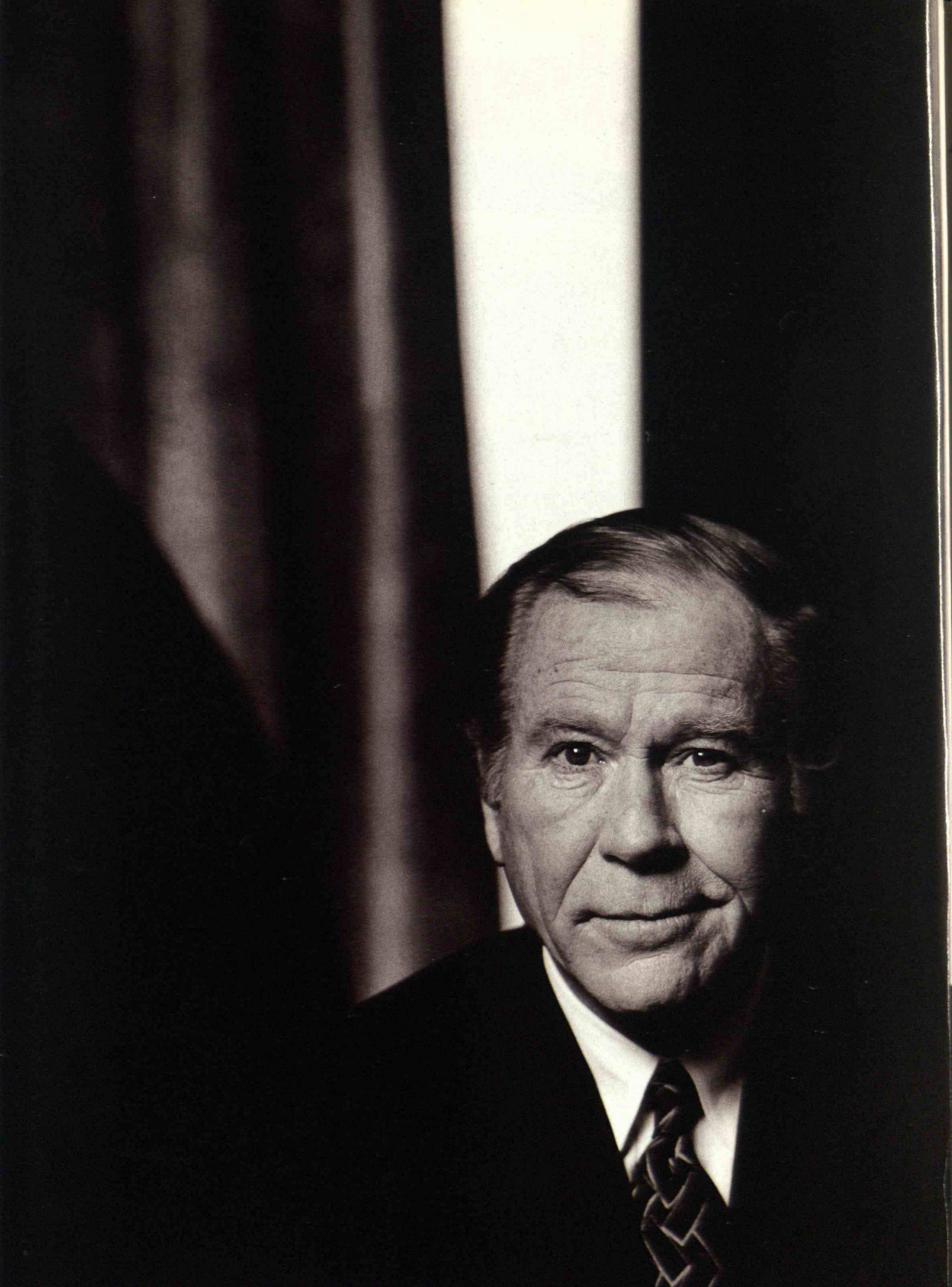
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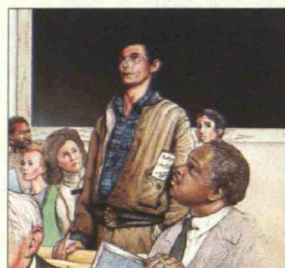
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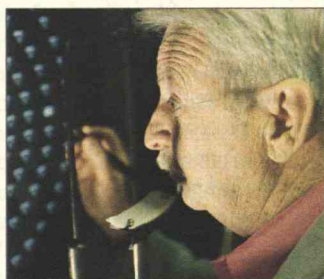
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Paul Patt in the Chapel Listening Room.

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Editor Publisher
Steven J. Marcus R. Bruce Journey

A baseball team boasting star players but lacking a manager won't likely have a winning record. An orchestra loaded with skilled performers but without a conductor rarely produces season after season of memorable concerts. For long-term success, organizations need leaders to help harmonize players' skills and provide focus, direction, and strategy, not just in pursuit of the group's particular art form but on practical matters—those nitty-gritty economic realities that determine its very existence.

Technology Review is an organization blessed with star players and skilled performers in all departments: editorial, design, and business. And we have long had most, but not all, of the necessary complement for leading this talented staff. An editor-in-chief, managing editor, and design director have endeavored to ensure the quality of the product in both words and pictures. But a magazine is ultimately a business enterprise; it stands or falls on the strength of its circulation, advertising, and budgetary performance. And the fact is that *Technology Review* has never had a full-time professional business leader, otherwise known as a publisher, until now.

Throughout most of the magazine's 97 years, the title of publisher of *Technology Review* was delegated to the executive vice-president of the MIT Association of Alumni and Alumnae. But regardless of that person's enthusiasm, intelligence, sophistication, and commitment to the magazine—our incumbent, William J. Hecht, has personified all that and more during the past 16 years—he or she was in charge of a large and complicated operation (of which *TR* is but one small part), fulfilled other duties as a high-level university administrator, and did not usually hail from the publishing business to begin with.

We needed a publisher who had long played in the magazine big leagues, was familiar with all aspects of the business side of general-audience (as opposed to specialized trade or professional) magazines, and who had or could readily establish strong contacts with major national advertisers appropriate to *Technology Review*. He or she also had to be imaginative, persistent, and entrepreneurial in order to make the most of academia's scarce resources—and help create some.

We have found that person: I am pleased

to introduce R. Bruce Journey, our new publisher and chief executive officer, who comes to us from Time, Inc. Journey has served at *Time* and *Fortune* magazines for 11 years, the last 6 as advertising director of *Fortune's* New England office. He has also been the publisher or advertising director of several television and cinema magazines. We were pleased to have attracted an impressive field of candidates, but Journey was the clear choice.

"We are fortunate to have Bruce Journey joining our team," says Robert M. Metcalfe, member of the *TR* board and head of the publisher/ceo search committee. "*Technology Review* is ready to take its next big step, which will involve a lot of what outside MIT they call marketing. And Bruce knows how to market magazines. What's even better, *TR's* editors like him, which is very unusual for anybody who's ever sold advertising."

"Like him" is an understatement. Consider some of my colleagues' thumbs-up assessments: "Confident, straight shooter, energetic, savvy. A salesman-type, to be sure, but decidedly non-oily." "Intelligent and sophisticated." "Solid, down-to-earth,

and personable. I'd buy an ad from him." "Damn, he got me fired up about our future! I'm excited about where this guy wants to take *TR*. Let's go!" "Now Bruce Journey, *there's* a publisher. His excitement about the magazine seemed genuine, and I was encouraged by his vision. Despite a firm grounding in ad sales, he immediately saw potential for other, more forward-looking ways [such as an enhanced online presence, conferences, and various spinoffs] of boosting revenue."

For his part, Journey is as enthusiastic as we are and is looking forward to a rewarding partnership between business and editorial. "*Technology Review* has quality and authority," he says. "Its connection with MIT gives it great credibility, and there is no better time to have 'technology' in the title than right now" because it has become a major interest of an increasingly technology-literate general public. In keeping with these strengths, a magazine like *TR* should be much more of "a forum for people who influence the decision-making process." Where they don't yet know about *TR*, "my job is to tell 'em."

Technology Review is the only general-interest national-circulation magazine owned by a university. And as far as Journey is concerned, that particular university is uniquely matched to *TR's* business potential. "MIT understands commercial achievement and is not afraid of it," he says. "People here seem to want to make *TR* much more prominent and financially successful. My presence, to provide the drive to get there, is a testament to MIT's commitment."

Actually, all these good vibrations are starting to make me a little nervous: in the ethnic milieu where I grew up you wouldn't broadcast celebratory news too vigorously lest you give it a *kinehora*—a jinx on the whole affair. But why worry about the supernatural? All we mortals can do is make logical decisions—in this case, put in place the person with the best qualifications, most enthusiasm, and greatest likelihood of doing the job well. We've in fact picked a manager who knows major-league ball. And although he's a nice guy, he's not one to finish last. So I have a feeling, knock on wood, that *TR's* prospects for a championship are about to improve. ■

—STEVEN J. MARCUS

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STEVEN J. MARCUS

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Letters

SCHOOL DAZE

With 20 years' experience teaching high-school chemistry and physics, I agree with Leon M. Lederman's premise in "Getting High School Science in Order" (*TR* April 1996) that the fight for science literacy "is a war well worth fighting, and it is winnable." But to win the war, we must start the battle long before students enter high school.

In the *New York Times* on January 7, 1990, Robert F. Watson, the National Science Foundation's director of undergraduate education, said "little children toddle off to school with positive attitudes toward science and math. By third grade, a tremendous number don't like it anymore. Unless you assume some physiological change is taking place, something is obviously happening in the schools." A majority of elementary-school teachers have almost no formal education in science. They admit science is their weakest subject, and their curriculum merely requires students to read some material and then complete worksheets. This is not science. Asking questions and then experimenting through hands-on activities to find answers is science. By changing science education at the elementary level, we can meet the prerequisites for successfully reorganizing the high-school science curriculum.

AVI ORNSTEIN
Educational Director
Little Scientists
New Britain, Conn.

Lederman's eloquent comments deploring our national scientific illiteracy are right on. What's more, I and many others I know, including some high-school educators, share his views on the poor sequencing of secondary science. However, many of us concerned about scientific illiteracy are less worried about

improving factual knowledge than about developing the ability to participate in the scientific process: to gather evidence, judge its validity, and carefully think through its implications. Unfamiliarity with this process underlies much of the irrational and often destructive decision making in our society.

The least likely place to instill inquiry-based science is in the high school. If we are concerned about eradicating scientific illiteracy in the shortest time, evidence favors K-6 reform, where the natural inquiry skills of children can be cultivated and scientific thinking can become a habit. Elementary teachers are also far more receptive to adopting inquiry pedagogy than high-school specialists for whom memorizing facts, using algorithms to solve problems, and achieving high AP test scores are too often the goals.

JERRY PINE
Co-Director, Precollege Science Initiative
Professor of Biophysics
California Institute of Technology
Pasadena, Calif.

Five years ago our school successfully instituted the science sequence Lederman recommends. With a physics background, our students are better prepared to understand, rather than just memorize, concepts in chemistry. The chemistry background in turn gives students a better understanding of biology. The later courses also reinforce earlier ones. When students reach their senior year, they can go on to a more traditional mathematics-based physics course or an advanced-placement science course.

RAZEL A. KALLBERG
Chair, Science Department
Berwick Academy
South Berwick, Maine

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We welcome letters to the editor.

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Having taught high-school chemistry and physics for nearly 30 years, I observe that science without mathematics is like a building without a foundation. And the only mathematical skill that science requires is simple algebra. Open just about any high-school physics textbook and you will see nothing but algebra. No calculus, no wave equations, no differentials. And yet I have found that most of my tenth graders cannot solve simple algebraic equations.

The problem lies not in the order in which science is taught—kids somehow survive the biology-chemistry-physics sequence—but in the mathematical skills they bring to the sciences. And the problem is not in the high schools but in the middle and lower schools, where mathematics is not perceived as the means for solving real-world problems and is

therefore not appreciated as an indispensable tool for learning science.

We need a math/science curriculum that starts in kindergarten and runs through the twelfth grade. We need kids who can calculate simple math without their eyes becoming glazed, who can graph and correlate data, who can perform elementary experiments with basic instruments like stop-watches and meter sticks, and who can write a simple lab report.

Whether kids become scientists may well depend on their individual experiences, but all will become citizens in a technological world. Even science-ignorant school administrators are beginning to recognize that science is no longer a back-burner subject.

JOHN ROSS
Morrisville, Pa.

The recommendation by American Renaissance in Science Education (ARISE) that physics be taught to ninth graders on a conceptual basis, "deemphasizing mathematics," may have merit, but did Leon Lederman and members of ARISE ask any high-school science teachers about implementing such an idea?

For many years, I have taught physics on a conceptual basis using *Conceptual Physics* by Paul G. Hewitt. Such a book is the intellectual equivalent of eating meringue: there is some taste, but not very much substance. I have found it necessary to augment the book with handouts providing the mathematics that the author conceals from the students.

A conceptual physics book would have to be very carefully written to prove acceptable. One such book did exist, but it is now out of print. This was *Project Physics*, developed with grants from the U.S. Office of Education and the National Science Foundation and last revised in 1981. This superb text

effectively blended physics, math, and history. I wrote to the NSF several years ago suggesting that it support a new edition but never received a reply.

In any case, I shudder to think of having to teach physics to freshmen rather than seniors. Ninth graders have not yet developed disciplined study habits, require considerable socializing simply to adapt to the high-school environment, and thus are ill-prepared to take physics as their first science course. For purely selfish reasons, I would prefer that my colleagues continue to teach biology to ninth graders!

WILLIAM L.R. RICE
Science Department
Annandale High School
Annandale, Va.

We fully support Lederman's argument that an important step along the path to improved science literacy is reversing the traditional high-school science sequence of biology, chemistry, and physics. However, he has left out a significant element: the earth sciences, the study of the materials and processes of our planet, need to be added to the traditional triad of high-school science subjects. Indeed, the new national science education standards released by the National Academy of Sciences explicitly define content standards for earth and space sciences, as do the American Academy of Arts and Sciences' Benchmarks for Science Literacy.

These efforts are important because the earth sciences are inherently interdisciplinary and serve as effective vehicles for integrating scientific fields in ways that are immediately relevant to students. The earth sciences are basic to understanding the landscape and weather where one lives. And the global environmental problems Lederman mentions as in need of public understanding—the ozone layer, climate change, and biodiversity—are all manifestations of a dynamic planet (with an overlay of human intervention) and integrate physical, chemical, and biological processes.

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