SPECIAL ISSUE:

COMMUNICATING PHYSICS TO THE PUBLIC

How does the layman learn about physics? Formal education is not the only way, and it probably is not even the main way. Long after the blackboards have become a chalky memory, people are scanning newspaper headlines, looking through weekly newsmagazines, listening to the radio while commuting, sampling programs on television after work or visiting museums while on vacation. And from each of these they get messages about science: Newspapers feature exciting news such as the detection of supernova 1987A; science "experts" on TV debate nuclear power and global warming; magazines and books tempt us with unsolved mysteries or regale us with the adventures of curious characters.

But what are the aims of those reports and programs? At what audiences are they directed, and what messages are they trying to convey? Are they overestimating the interest of the public? Is what they communicate about science and scientists even correct? With this special issue, PHYSICS TODAY explores such questions about this other mode of learning, which some have called "informal education."

Many programs devoted to science now air on public television, some funded in part by the Federal government. But such programming rarely finds its way onto commercial stations, with their much larger audiences. In the article beginning on page 24, George Tressel looks at the development of some well-known science programs, drawing on his experience overseeing NSF funding of TV and radio programs over much of the past 15 years. Tressel discusses the tension between the government sponsors, who insist on oversight by expert panels, and the producers, who want journalistic freedom.

Newspapers are often the first place the public learns of new discoveries. Veteran reporter Charles Petit of the *San Francisco Chronicle*, in the article on page 35, describes the challenges that he and his colleagues face in bringing science to the public. Often journalists must present in an understandable way complex material that they themselves have heard about only a few hours before. The topics they select to highlight are not necessarily those that a scientist would judge as the most important.

Social scientist Dorothy Nelkin analyzes the way newspapers and magazines cover science in the article on page 41. Nelkin discusses the problems of science reporting and traces them to scientists as well as journalists. Some scientists, she writes, attempt to use the press to promote their own work, while others disdain to talk to reporters. For its part, the press relies too much on imagery rather than substance, and is less critical in its coverage of science than it is of, say, politics.

Many people would rather experience science than read or hear about it. These individuals are attracted to the growing number of hands-on science museums, many modeled after the pioneering Exploratorium in San Francisco. In his article on page 50, the acting director of the Exploratorium, Robert Semper, describes the special value of interactive exhibits, the kinds of learning experiences they make possible and the attention that is paid to their design.

While the first four articles of this issue take the concept of science literacy as more or less a given, the fifth article, starting on page 60, explicitly examines just what scientific literacy is and just why a scientifically literate public is desirable. PHYSICS TODAY submitted a list of questions about science literacy to seven observers from universities, industry and government. They responded with a stimulating array of viewpoints.

Much of the public seems increasingly alienated from science, and yet an understanding of science is necessary for full participation in society today. As citizens we are called upon to debate the merits of particular defense systems or costly new science projects. As consumers we have to determine the validity of claims concerning the products we wish to purchase. As parents we have to satisfy the curiosity of our children about things that are both wonderful and frightening.

Science is an important part of our culture, and as such should be readily accessible to all. We hope that this special issue of PHYSICS TODAY contributes to that goal.

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—JEFFREY SCHMIDT