

editorial

Physics and physicists in industry—forever!

Since 1958 the role of physics in industry has been communicated to university faculty and thus, hopefully, to students by the Corporate Associates of the American Institute of Physics. The Corporate Associates include 101 corporations, institutions, and laboratories listed, as they are periodically, in this issue (page 78). Each has an interest in working with the American Institute of Physics to encourage the participation of physics in industry. The corporations listed, incidentally, have annual gross sales of over 500 billion dollars! Thus, this nation's primary industrial strength supports the Corporate Associates' goals, which were reaffirmed by the AIP Governing Board at a recent board meeting:

The Corporate Associates of the AIP—

- ▶ Support the need for a broad physics research program in the United States, both fundamental and applied, to serve, in part, as the basis for future industrial technology and to guide its wise employment.
- ▶ Support the improvement of faculty/student understanding of the role of physicists in industry and in government. This includes their motivation, their goals and accomplishments, and the requirements they must meet.
- ▶ Encourage students trained in physics and interested in industry to foster skills to enhance communication with persons outside the physics community.

To further enhance communication, during the past three years the Corporate Associates Annual Meeting has been held at the following laboratories: General Motors Research Laboratories, IBM Research Laboratory and Battelle Memorial Institute. At these meetings, industrial research executives, heads of university physics departments, and government research managers interact to fulfill the Corporate Associates' objective of improving and fostering communication among industrial, academic and government physicists.

A new Prize for Industrial Application of Physics, awarded on behalf of the Corporate Associates of the American Institute of Physics, was established "To emphasize industrial applications of physics; to publicize the value of physics research in industry; to encourage physics research in industry; and to enhance students' awareness of the role of physics in industrial research." The first prize was awarded this year to Robert D. Maurer of the Corning Glass Works for contributions to the fabrication of glass fiber waveguides for optical communications.

The above illustrate new, and I believe, effective directions for the Corporate Associates. These are timely since physicists in recent years have discovered that the breadth and depth of physics research in many industrial laboratories offer unparalleled challenges and professional growth. There are "industrial frontiers of physics" in laser

spectroscopy, surface and interface physics, semiconductors, magnetic alloys, metals and polymers. These frontiers are established by physicists, since physicists ask and then answer fundamental questions that can lead to new, useful products. For example, lasers and magnetic-bubble memories were invented by physicists working at frontiers in optical processes and in magnetic materials.

The industrial frontiers of physics differ from traditional frontiers like high-energy particle physics and astrophysics. My view is that the former are every bit as exciting, challenging and rewarding as are the others. Perhaps even more so. One of the reasons for this view is that physicists in industry not only receive the satisfaction of seeing their research findings published in frontier scientific journals such as *Physical Review Letters*, but quite often they also see these findings embodied in a company product, which provides an immediate sense of accomplishment.

Management in industry continually searches for new ideas. Since ideas come from people, industry searches for those "idea people." Physicists and other scientists contribute these ideas and understanding; engineers usually provide the follow-through in developing these ideas into commercial products. In some companies, however, physicists are able to help develop their concepts all the way to the production stage! Thus physicists in industry have an opportunity to respond directly to societal needs.

Key ingredients for successful growth of physicists in industry are quality of research, broad interests and flexibility. Since technical needs in industry change with time, researchers are expected to fulfill these needs as they change. In addition, superior communication skills, both verbal and written, are essential. A physicist in industry quickly discovers that how well he presents a research proposal to management often determines the acceptance or rejection of that proposal.

Thus a physicist's responsibility in an industrial laboratory also includes effective communication, but the future of physics in industry really depends on the productive research efforts of individual physicists. Results of this research ultimately benefit mankind through innovative industrial utilization. Physics research will endure provided the goals of the Corporate Associates are continually supported by industry, academe and government, thus ensuring physics and physicists in industry—forever.

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