



## THE UNIQUE ROLE OF THE INDEPENDENT, NOT-FOR-PROFIT RESEARCH INSTITUTE



Of the many types of organizations performing research and development work, the least understood by some is the independent, not-for-profit research institute as typified by Battelle Memorial Institute.

The roles of government, industry, and higher education in our research and development establishment are reasonably well defined, understood, and clearly essential.

The first objective in the Federal Government's role in science and technology, as Leland J. Haworth, Director of the National Science Foundation, said in his guest editorial, (*Nuclear Applications*, June 1965), "is to assure that the scientific and technological health of the country is first-rate. . .;" a second objective is ". . . to develop, or have developed, end items that the Federal Government needs directly for its own purposes," and, thirdly, "the Federal Government should encourage and . . . assist in practical developments that are in the general public interest. . ."

Profit-motivated industries, including the commercial laboratories, have a responsibility to their owners to conduct research and development work that leads, as directly as possible, to profitable new or better products or processes.

Research and development endeavors at our universities and colleges must be directed toward teaching students and broad extensions of knowledge within the several scientific disciplines.

To be sure, the work of the not-for-profit institutes is often governmental, industrial, or institutional in nature, but, in addition, they have responsibilities in four distinct areas that set them apart from any other type of research organization. These are:

*. . . to provide highly specialized capabilities, facilities, and equipment so that sponsors need not make major investments in staff and facilities for limited or short-term programs.* To illustrate, Pacific Northwest Laboratories are currently engaged in a study exploring possible applications of nuclear technology to the study of the oceans. The study has already uncovered several areas where potential exists for applying nuclear technology to the study and use of the oceans. Initially, it appears that one of the most useful functions Battelle can perform, in increasing the use of the oceans for the benefit of man, is to develop broad capabilities and facilities for oceanic research and development. This will enable sponsors to explore oceanic applications without making highly speculative major capital investments. This effort, to apply the extensive nuclear background of the Pacific Northwest Laboratories to a newly developing and apparently unrelated field, is an example of spinoff on a broad scale.

*. . . to the extent their capabilities permit, the not-for-profits have a responsibility to conduct exploratory research where the results are too uncertain for industry to pursue.* The story of Xerography is a classic example of this type of research. Xerography, the

invention of Chester A. Carlson, might well have been lost, but for Battelle. It was rejected by several companies that, logically, could have developed it. Battelle, through its own resources, undertook the development that led to a commercially feasible process. The business enterprise of the Haloid Company, now the Xerox Corporation, provided the impetus that carried the invention to the point where it is now a thriving industry employing thousands.

. . . to encourage interdisciplinary research that is impractical for virtually any other type of scientific organization. In the real world of applied science, few problems are neatly labeled for the "physicist" or "chemist" or "biologist." Since World War II, the "task force" approach to complex research and development problems has proven very successful. This amounts to putting together interdisciplinary teams, with each team member working on the portion of the problem that is his specialty. At the same time, he maintains close liaison with the rest of the team.

Scientific breakthroughs of the future may hinge upon a further evolutionary step—that of cross-disciplinary research, which will bring the viewpoint of one discipline to bear on a problem traditionally considered to be another's domain. Thus, the diseases of man may be assaulted by engineers and physicists. New types of computers may, some day, have biological components (other than the operators). The cross-disciplinary approach fits neatly within the existing interdisciplinary capabilities of the not-for-profit organization.

. . . to provide a bridge—via education—between science and the humanities. Many of the not-for-profit institutes have had long and traditional associations with universities and the academic communities. Their efforts in interpreting science for mankind have included publications, development of information programs, supporting fellowships and chairs, conferences, and short courses. Since its inception, Battelle has recognized that research and education are inseparable and has worked in diverse ways to meet its responsibility for the dissemination of knowledge and the encouragement of education. To fulfill its educational role further, Battelle has embarked on an experiment aimed at providing an interface between science and the humanities. The first step is the establishment of a seminar and research center adjacent to the University of Washington campus in Seattle. Here, leaders from the physical, life, and behavioral sciences and those from the humanities can meet to explore potential solutions to problems brought about by the rapid advance in science and our rising population.

As Victor J. Danilov, Executive Editor of *Industrial Research Magazine*, has pointed out: "The independent not-for-profit research institutes have succeeded in the past because they fulfilled a need . . . whether they prosper in the future will depend upon whether they continue to serve a useful purpose 'in the public interest'."

The need—particularly in the areas outlined above—is greater than ever. As our nation's total research and development efforts continue to grow and as the problems faced become more complex, the kind of research the independent not-for-profit institute is uniquely equipped to do will also increase. Speaking for Battelle's Pacific Northwest Laboratories, I am confident we can meet and fulfill the need.

