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Technology in Response to Local Needs

Before the period when President Johnson talked of the Great Society, federally sponsored research and development was concerned primarily with problem areas external to society, specifically those of defense posture and the space program. Since then the scope of federal R & D has broadened to include domestic problems such as urban economic development, transportation, and energy conservation. Several editorials in *Science* have illuminated aspects of this situation.*

Effective R & D, or technical assistance and technology transfer, on domestic problems is peculiarly difficult because the users are generally varied and dispersed. For example, in the area of energy conservation the clients include consumers, builders, heating and cooling contractors, architects, and utilities. This is typical of domestic problem areas; we must reach the grass roots. Yet the federal R & D community is not responsive to local needs. Rather, it is focused where the money is, in Washington, D.C. This incongruous situation is a major obstacle to progress. What is needed is a structure that integrates the R & D community with problems and people at the local level. The major difficulty in designing an appropriate delivery system is that of providing a technology extension service which achieves intimate contact with millions of local businesses and thousands of state and local government agencies. If a delivery system is designed from scratch, the costs are formidable and the problem of achieving the required rapport between the system and the people to be served may be insurmountable. Both issues indicate that organizations which are already an integral part of the community should be used to provide the technology extension service.

A set of institutions that have become strong and well supported at the community level and are committed to community service are the 1200 community colleges located across the country and serving a major share of the people. It is recommended that the community colleges—which have the required geographic distribution, service orientation, constituency, and value system—should have a prominent role in a national R & D delivery system.

Universities, research institutes, and government laboratories would operate in concert with the colleges by conducting research that is responsive to local needs and by obtaining from the R & D community results and products that can be moved into the economic stream. Substantial costs would be involved in establishing such a delivery network; however, they would be a small fraction (perhaps 1 percent) of the cost of the current R & D enterprise. Also, the additional resources brought to bear are large enough to have a major impact. In terms of dollars, the operating budgets of the community colleges total over \$5 billion per year, and the enrollment is more than 4 million students, with the majority in vocational and continuing educational programs.

A pilot program has been in operation in Michigan with support from the Economic Development Administration of the Department of Commerce. The program stresses cooperation with the activities and resources of the (agricultural) Cooperative Extension Service and other public and private assistance programs. The performance and institutional motivations thus far demonstrated are encouraging. Energy is a national problem area in which the community colleges could be very helpful in disseminating information and techniques. This is especially true of the effort to attain better conservation of energy in home heating and cooling. It is also likely that expanding applications of solar energy such as water heating and use of biomass would be facilitated if the community colleges were broadly involved.—WILLIAM M. BROWN, *President, Environmental Research Institute of Michigan, Ann Arbor 48107*, and EDMUND J. GLEAZER, JR., *President, American Association of Community and Junior Colleges, Washington, D.C. 20036*

*R. L. Bisplinghoff, *Science* **190**, 1045 (1975); J. G. Horsfall, *ibid.* **193**, 637 (1976).