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The New Physics Report*

During the past several years, the National Academy of Sciences has issued reports on the status and needs of various branches of science. A voluminous report on physics has just been released. Some of the best resources that the academy can bring to bear have been mustered in support of these efforts. A substantial fraction of the most competent and distinguished scientists in various fields have labored diligently on committees and panels preparing the materials. Drafts have been reviewed by the prestigious Committee on Science and Public Policy. Typically, in a foreword, the president of the academy has bestowed his blessing.

The reports have shared many features. They have portrayed opportunities (often interestingly and imaginatively), decried the limited level of support for the particular science, predicted diaster if present trends were continued, and offered the wisdom that most problems would be solved if more money were made available.

Since the reports have been so obviously self-serving, it is not surprising that the prodigious efforts devoted to them have come to little, and it is unlikely that the latest edition will fare much better. This is regrettable, because an excellent case could be made for maintaining the vitality of physics. Within its pages, the report contains interesting and persuasive material. Chapters devoted to the "Nature of Physics" and "Physics in Perspective" are particularly worthwhile. The latter chapter provides an especially good survey of the status of various branches of physics. Some of the potential impact of this material is lost in the excessive length and scope of the remainder of the report. Credibility is also strained by occasional unconvincing arguments and statements. The committee seemed unable to be completely objective in its treatment of high energy physics. After more than 20 years and the expenditure of more than a billion dollars, high energy physics has had limited direct impact on other areas of science and, indeed, on the rest of physics. In contrast, low energy nuclear physics and the physics of energies of 100 volts and less has had very great impact. This impact has taken the form of interaction within physics, usefulness to other disciplines, and many technological applications. Examples of recent contributions of enormous value are laser developments and microelectronics.

Experimental technics and equipment developed by physicists have often been applied in other fields. Indeed, new instrumentation is one of the most important factors in the vitality of the natural sciences. Another major kind of contribution has come from the migration of physicists into such fields as astrophysics, geophysics, and biophysics. A substantial fraction of the nation's best geophysicists received their basic training in physics. High energy physicists have been among the migrants, but their training has not equipped them so well to be creative in other fields.

Although the committee report fuzzes over the situation, the reality is that there are two quite disparate kinds of physics and only one is highly relevant. Both types should be supported, but in a crunch, high energy physics should defend itself on its own merits.

The procedure of asking representatives of a discipline to prepare material on their own field has some merit. But the experience of many years and many reports bears out the bromide of not asking the fox to guard the henhouse. Surely the academy can improve on that procedure.—PHILIP H. ABELSON

* A. Bromley, Ed., *Physics in Perspective*, Publ. No. 2037 (National Academy of Sciences, Washington, D.C., 15 August 1972), 1088 pp., $25.