Letters

Exercise and Heart Disease

One thing that fairly leaped out of the pages of the recent Research News series on heart disease, at least to a running addict like me, was the continued lack of systematic investigation into the role of exercise in prevention of, and in recovery from, cardiovascular disease. The series mentions only that there is a general belief that exercise is beneficial, but that this belief is not based on very hard data, such as controlled clinical studies. Given the pervasive circumstantial evidence that exercise is an important factor in determining the state of an individual's cardiovascular system, and in particular that regular endurance-type exercise may mitigate factors such as obesity and hypertension, which are well-known precursors to heart attacks, isn't it time for well-controlled, long-term studies concerning the effects of exercise regimens on the incidence and recurrence of cardiovascular disease?

Whatever the outcome, the results would be important. Positive results would lead to the refinement of a powerful weapon against heart disease, while negative results would mean that some of us could save a lot of time, effort, and sweat.

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The Biome Programs

The article "An evaluation of three biome programs" by Mitchell *et al.* (28 May 1976, p. 859) is disappointing in its failure to draw useful conclusions from the very limited analysis made by Battelle, Columbus Laboratories, of these programs. While the article identifies both strengths and weaknesses of the biome programs, it falls short in any attempt to analyze the source of these strengths or weaknesses, particularly the weaknesses.

Many of the problems identified by Mitchell *et al.* existed. One would assume that the major benefit to be gained from such an analysis would be to provide insights for assessing future large-scale, team-oriented interdisciplinary research programs and to enable such programs to take advantage of past experience. Statements such as "scientists most likely to pursue integrated research in the future come from programs with lowest administrative costs . . ." or other general statements made throughout the article concerning the role of management contribute little to understanding the nature of the effectiveness or lack thereof of program organization and operation. The three programs analyzed in the study differed significantly in their approach to program organization and differed very significantly in the nature of the organizations through which they were administered, thus making such general conclusions meaningless. Also, the tendency to lump studies of the three biome programs together in conclusions concerning their operation is a substantial disservice to the reader. In many cases it is the differences in operation which can give insight into the successes or shortcomings of specific aspects of the three programs.

A second problem is the timing and context in which the study of the biome programs was carried out. References to "the end of the IBP [Internationl Biological Program] authorization in June 1974" and statements such as "United States participation in the IBP began in 1969 and ceased in 1974" leave the reader with the distinct impression that the biome programs ceased in 1974. It would have been helpful for an understanding of the significance of the review if the authors had made clear that, while U.S. participation in the IBP did indeed end in June 1974, the biome studies did not terminate at that time. Two of the studies, the Grassland (GB) and the Eastern Deciduous Forest (EDFB), have continued to be quite active (GB funding ending in December 1977). It should also be pointed out that the Battelle review took place during a period of approximately 1 year beginning after mid-1974. A clear recognition by the reader of the above allows for a different overall interpretation of the findings. For example, conclusions as to the nature of the program outputs are premature; by design much of the synthesis started after the study by Battelle was completed. In defense of the Battelle group as to some of the shortcomings of their analysis, it is our impression from our interaction with the authors that they were given too little time and too few resources to conduct an in-depth study of programs with such broad scopes. Also, it certainly would have been more meaningful had they been asked to carry out this study, not at the end of IBP, but sometime *after* the end of the funding of the biome programs.

Additionally, several important errors in fact need to be pointed out.

1) The statement concerning the lack of plans for publishing the synthesis volumes is inaccurate.

2) The authors state that the data banks of the EDFB and GB have been essentially useless and, in fact, contain "very little field data." With respect to the GB data bank, this statement does not represent accurately the situation at the time the Battelle group carried out its study and is totally inaccurate at this time. In fact, the GB data bank contains 99 percent of the field data collected from seven grassland-type sites for a period of 3 to 4 years and includes more than ten standard categories of standing crop (biomass) data from each site per year in addition to data from other field and laboratory studies. As noted in the Battelle report to the National Science Foundation (*1*), there were at the time of the study 117 titles and 572 sets of annual data, and more have been added since. Currently the data are 90 percent reviewed and are being made available routinely for modeling and synthesis purposes. It is true that there have not been a significant number of outside data requests filled. This does not represent a problem of the data bank, but rather a lack of knowledge by potential users of the content of the bank and methods for gaining access to the data. It could be termed a shortcoming of the GB program that this information has not been made available.

Little insight is shed on what should be the important question: How can the