Letters

Nutrition Report and the Academy

Eliot Marshall's article "The Academy kills a nutrition report" (News and Comment, 25 Oct., p. 420) is informative, generally correct, valuable in identifying the issues, and clear in its designation of which individuals and groups are identified with which viewpoint. Marshall attributes the major errors and misconceptions, correctly, to those who oppose our committee's draft of the 10th edition of the Recommended Dietary Allowances (RDA's).

The major issue is the conflict between those who wish to give the best science possible—a viewpoint identified with the RDA committee—and those who appear to be injecting policy considerations into scientific judgments. If, as National Academy of Sciences president Frank Press says, there are substantial "scientific differences of opinion," then surely they could have been expressed in the language of documented science. But these "scientific" reasons have not emerged despite repeated requests on the part of the RDA committee.

Adverse policy effects are predicted by D. Mark Hegsted (a long-time critic of RDA's who is cited in Marshall's article). Hegsted accuses us of approaching our task "as a purely academic exercise and from a very limited perspective," and seems to imply that we are insensitive to the impact of our changes on policy. Michael Lemov of the Food Research and Action Center is quoted as citing the "shocking" possibility that reducing the RDA's would mean "less food and more hunger for millions of people" in food programs.

These critics are misguided on several grounds. (i) The RDA's have not been systematically "reduced"; we made no effort to impose a direction of recommendation for the 29 or so nutrients covered. Some are up, some are down, and a few are unchanged. We simply went nutrient by nutrient, giving each the best value we could. (ii) It is ridiculous, on the basis of the few RDA's "leaked," to predict overall cost or food pattern, and my own guess is that there would be little if any effect. This is confirmed by Betty B. Peterkin, acting administrator of the Human Nutrition Information Service of the U.S. Department of Agriculture, who writes me: "The possible effects of changes in RDA for a few nutrients . . . on food assistance programs [have] been greatly exaggerated. RDA changes, since the development of the school lunch meal pattern in the 1940's, the poverty formula in the 1960's, and the food stamp standard in the early 1970's have *not* affected the dollar-related aspects of these standards."

But the most important reason for rejecting these arguments is that scientists should give the best advice they can and should not twist their science to meet the needs or desires of policymakers, constituencies, or special interest groups. The product of the latter attitude is both bad science *and* bad policy. Who are we on the RDA committee to make the judgment that present policies are necessarily correct? Or wrong? Good administrators recognize this, and Peterkin writes of her "wholehearted support of [our] view that the Recommended Dietary Allowances should represent the best advice scientists can give and should not be affected by policy considerations. . . ."

Hegsted, in the 18 March letter cited by Marshall, makes grave warnings about bad public relations, controversy, congressional hearings, and so forth—that the public would be confused and the Academy embarrassed. His allegations that our report would "undercut" the 1982 Academy report *Diet, Nutrition, and Cancer* are incorrect. Our RDA's have no inconsistencies with the 1982 report, but may be inconsistent with the publicity-induced mythology that surrounds it. Even if this *were* true, must all scientists "speak with a single voice"? If the credibility of the Academy rides upon resistance to change, then it is a far weaker institution than one would have thought.

Another misconception is that the RDA's are "minimal." The change in the wording of the definition was actively encouraged by the Food and Nutrition Board (FNB) to sharpen the distinction between the quantitative "nutrient" approach of the RDA's and the qualitative "dietary pattern" approach of a "Diet and Health" project the FNB was planning; we were making room for "their" place on the turf. But this does not justify the use of the term "minimal"; our goals, including generosity of safety factors, were the same as those of previous RDA committees, and we state explicitly that "the committee can cite no additional benefits of increasing intakes of nutrients beyond the quantities recommended for persons consuming a normal mixed diet of foods from a variety of biological sources."

What may have happened is that Hegsted's letter frightened the Academy. His use of the term "fiasco" in referring to the report *Toward Healthful Diets* is correct only in that it is so considered by the present Academy administration; Philip Handler's administration defended it vigorously. The report is by no means dead, since the issue it raised is a strategic one: would the public be better served if the advice to decrease fat intake were to be strongly targeted to those at risk or diffused throughout the entire population? The question is a serious one and is not going away.

But the Academy can act timorously and be frightened away by hints of controversy, "bad" image, public relations, and other nonscientific considerations, such as fear of "giving confusing signals to the public." Its responses, thus far, have consisted in extolling its review procedures and systematically avoiding direct discussion of the scientific justification of its objections to the actual points at issue—the proposed RDA's for vitamins A and C. Our attempts to reopen serious discourse on these issues have been unsuccessful over a period of months. We remain open to such discourse; as I wrote in my 29 October letter to James Wyngaarden, "I have often stated that no values are final until the book is in print, and we have been totally flexible in modifying our values for other nutrients in response to valid scientific critiques. But critiques must be based upon sound and documented science, and not upon hunches, personal preferences, public relations, fear of controversy, or criteria of whether they support or question existing programs. . . . We remain open to such [scientific] criticism, but in its absence the

NAS should withdraw its objections to these chapters."

Future reports will provide the history of how our committee failed in its attempts to find a common scientific language with the Academy. But it is clear that in its attempt to avoid controversy over two numerical values (values that fall comfortably within the range of recommendations of other nations), the Academy has forced attention on more serious questions: the capability of the present nutritional establishment at the Academy to give impartial scientific advice and the Academy's fundamental integrity as a defender of the scientific process.

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Marshall's article about the "death" of a nutrition report does not address the heart of an important question involving the academic community and the National Academy of Sciences. That question is whether social and political pressure generated by nutrition activists, sociologists, lawyers, and some zealous scientists should be able to nullify a sound scientific report.

Chairmen of the National Research Council have occasionally taken exception to NRC reports, but if the science has been acceptable, as it seems to be in the case of the report of the 1985 RDA committee, they have not banned them. Frank Press told Henry Kamin on 15 August that all issues but the RDA's of vitamins A and C had been resolved. The idea of suppressing a report that cost the National Institutes of Health $600,000, covers the breadth of human nutrition, and deals with recommended allowances for 29 nutrients and energy because of a fictitious belief that reduced, but still generous, RDA's for vitamins A and C conflict with a recent report on diet, nutrition, and cancer (*1*) is unbelievable.

The trend in dietary allowances over the past 40 years in the United States has been mostly downward, as new information has refined the amount of the safety factor required to meet the nutrition needs of healthy persons (*2*). In 1943, the RDA for vitamin C was 75 milligrams per day, which was decreased gradually until 1974, when it reached 45 mg per day. Hence, the RDA of 40 mg per day proposed in the 1985 RDA's is not significantly lower than the 1974 recommendation. In 1974, an expert committee on nutrition of the Food and Agricultural Organization–World Health Organization (FAO-WHO) in Geneva recommended 30 milligrams per day. The Canadians and British have, over many years, steadfastly recommended 30 mg or less of vitamin C per day, and epidemics of scurvy or cancer have not erupted in those countries. In fact, it is generally agreed that 10 mg of vitamin C per day will prevent scurvy.

The same trend is seen in the recommended dietary allowances for vitamin A. McClaren (*3*) has pointed out that vitamin A is a luxus vitamin in the Western countries, that the average intake exceeds the RDA in both Europe and the United States. The allowance for vitamin A recommended by the United Kingdom, most European countries, and the FAO-WHO (*4*) is 750 retinol equivalents per day, which is not significantly different from the recommendation of the 1985 RDA committee for vitamin A of 700 retinol equivalents for men and 600 retinol equivalents for women. In fact, it is not only reasonable, but desirable, to reduce the RDA for vitamin A, because continued high intake may increase the risk of vitamin A toxicity.

D. Mark Hegsted, in his letter of 18 March to Kurt Isselbacher, stated, "the recommendations to lower the RDA for vitamin A and C are in direct conflict with the prior report on diet, nutrition, and cancer. . . . It is true, of course, that the Diet, Nutrition, and Cancer committee could not provide quantitative guides for vitamin A and C. This is typical of the cancer field today."

With this type of argument, it is not difficult to see why the Academy and its reviewers reached a standoff with the committee. Hegsted accuses the RDA committee of providing "no physiological evidence relating the vitamin A RDA to health." The RDA committee examined all evidence from epidemiologic, physiologic, clinical, and biochemical spheres to be certain that the RDA would not only protect against deficiency diseases in all healthy persons but also guarantee optimum performance and continued health. The RDA's were determined on the basis of nutritional science, whereas guidelines, as Hegsted admitted, cannot be quantitative. There is, therefore, no conflict between the RDA committee and statements on dietary guidelines.

Of real concern is a possible conflict of interest of persons who are members of the Food and Nutrition Board and at the same time represent federal agencies such as the National Cancer Institute. The NCI has developed a nutrition education program stressing reduction of dietary fat, increase in dietary fiber, increase in foods containing vitamins A and C, and cruciferous vegetables as a regimen for the prevention of cancer (*5*). Furthermore, the NCI has worked with a food company that promotes eating bran cereals as one dietary practice that may reduce cancer risk (*6*). Both of these activities exceed the recommendations of the 1982 Academy report on diet, nutrition, and cancer.

In summary the failure to publish the 1985 RDA Committee's report by the NAS is unprecedented, unjustified, arbitrary, and unwise. There are no valid scientific arguments against publication of this report. The rejection of the report by the Academy, presumably because of social and political pressure, is a frightening harbinger of the future. The Academy is supposed to be the highest shrine in America for the protection of good science against these very pressures.

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2. A. S. Truswell, *Proc. Nutr. Soc.* **35**, 1 (1985).
3. D. S. McLaren, *Am. J. Clin. Nutr.* **34**, 1611 (1981).
4. Joint FAO/WHO Expert Group, "Requirements of vitamin A, thiamine, riboflavin and niacin" (WHO Tech. Report Series 362, World Health Organization, Geneva, 1967).
5. *Diet, Nutrition, and Cancer Prevention: A Guide to Food Choices* (National Institutes of Health, Washington, D.C., 1984).
6. *Am. Med. Assoc. News* (22 March 1985), pp. 3 and 16.

Eliot Marshall's article in the 25 October issue implies and Kamin and Olson in letters in this issue assert that the recent action of the National Research Council on the Recommended Dietary Allowances (RDA's) was governed by policy considerations, pressure from special interest groups, and a fear of controversy. In fact, our decision was based on advice from scientific reviewers, including members of the Food and Nutrition Board and the Commission on Life Sciences, which oversee the preparation of the RDA's; members of the National Academy of Sciences; and other nutritionists as scientifically competent as the panel that drafted the report.

To ensure accuracy, completeness, and balance in interpretation of scientific data, every Research Council report is reviewed by specifically appointed inde-

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pendent scientific experts and any professional unit that oversees the work of the panel. It was the judgment of these reviewers that the RDA panel's suggestions for modifying the recommended levels for certain nutrients were not justified by the scientific evidence presented. The panel was apprised of these detailed criticisms—over 130 pages in all. However, the panel's responses satisfied neither its parent unit—the Food and Nutrition Board—nor the officers of the National Research Council.

Regrettably, the flexibility claimed in Kamin's letter was not apparent during lengthy discussions between him and various representatives of the Research Council in intensive efforts to resolve certain differences of scientific opinion. The suggestion that the RDA's for vitamins A and C were the pivotal points for my decision is misleading. At one stage, focus was indeed placed on vitamins A and C on the *assumption* that all other major issues had been resolved. Resolution of the RDA's on vitamins A and C was part of a series of major subjects that needed attention to bring the draft up to the standards considered acceptable for NRC reports. The crux of the matter is not whether the RDA's proposed by the panel were higher or lower than the current ones, but whether these proposals were based on strong scientific evidence and sound logic. It was the latter that gave the Research Council and its reviewers serious cause for concern.

Robert Olson was neither a part of the panel nor party to the review process. His letter contains unverified assertions about the NRC's decision, selective citations, faulty characterization of the review process, and unjustified attacks on members of the Food and Nutrition Board. All Research Council professional units are periodically examined for balance of expertise and viewpoints. The current Food and Nutrition Board is a broadly constituted, well-balanced group of experts from academia and the public and private sectors.

Kamin, Olson, and others who take issue with the Research Council's process of decision-making appear to reject the most basic tenet of American science—the peer review process. Despite months of deliberation and discussion, the panel's draft did not pass the scientific peer review and achieve the standards expected of Research Council reports. Under these circumstances, it is in the best interest of the scientific community and the public for the Research Council to establish a new panel charged with producing a report that can, like all our reports, withstand a rigorous scientific review.

FRANK PRESS
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Understanding Science

Daniel E. Koshland Jr.'s eloquent call for "Scientific literacy" (Editorial, 25 Oct., p. 391) is testimony that the AAAS has not done enough with the old *Scientific Monthly*, the new *Science 85*, the radio broadcasts, the internship program with the media, the congressional fellowships, the museum displays, and so forth. Why not try organizing and financing a cadre of retired scientists and educators to advance the understanding of the scientific enterprise? There are many willing and able to capture attention and motivate and sustain interest. They are ready; working scientists are probably too busy.

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The scientific illiteracy described so cogently by Koshland in his 25 October editorial is really a general and massive failure of our public education system. An adequate understanding of logical thinking and methods of inquiry does not require specialized scientific and mathematical training per se. The concepts of the scientific method, experimental design, nature of risk, and even chance, probability, and statistical inference are essential elements of any reasonable education. They were so regarded (as part of Natural Philosophy) right through the last century. All are best grasped in the early formative years of elementary and secondary school.

The concepts do, however, have to be communicated by committed and dedicated teachers, a "species" in real danger of extinction. In addition to inadequate remuneration (elementary and secondary school salary scales are well below those of clerical, laboring, and service occupations), psychic and status recognition awards from society are also generally at an all-time low. Would any of our modern-day social-hero role models (entrepreneur, financier, engineer, or scientist) advise their children to be public school teachers?