# Letters

## Publication: Numbers and Quality

There are many factors contributing to the increase in the bulk of scientific publications. Over the past score of years there has been a great increase in the number of individual workers in many research areas, an increase in laboratories housing such workers, an increase in the number and size of available journals, and an increase in the competitive pressures for available research fund support. There is, in addition, an increased pressure on the individual scientist to publish abundantly and thus to increase his bibliography. Rightly or wrongly he may conclude that his success or failure in attainment of future promotions, outside job offers, procurement of research grant support, memberships in prestigious societies, and medals, prizes, and other rewards are determined largely by the length of his bibliography. This attitude contributes to what, in the minds of some, is excessive and sometimes redundant publication.

I should like to propose a possible action that would tend to offset this frenzy to publish. If those agencies that recommend promotions, appointments, funding of research, memberships in prestigious societies, and the awards of medals and other honors would agree to consider only a very select list of the bibliographic citations, I believe nothing important would have been lost. Let the applicant select, say, one dozen of his bibliographic citations that are most meaningful to him; then the pressure to publish as perceived by the active scientists might be diminished. If the judge in each case is confronted by 12 articles that he may conceivably read rather than by 300 or 500 articles that he will certainly not read, something will have been gained in the process. In this regard it may be pointed out that in nominations to the Nobel Prize only 12 citations are requested. Similarly, nomination to membership in the National Academy of Sciences requires a selective bibliography of no more than 12 publications. Such an action if effective would tend to reduce the present emphasis on the *numbers* of publications and might restore emphasis where I believe it belongs, namely, on the *quality* of publications. It would further simplify the task of the awarding committee as well as the chore of that more overworked population, the secretaries who must prepare the nominations.

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## Vegetables, Fruits, and Oncologists

An illustration on page 538 accompanying the article by Eliot Marshall "Diet advice, with a grain of salt and a large helping of pepper" (News and Comment, 7 Feb., p. 537) shows the back of a cereal box with the text of a message "reviewed and cleared by the National Cancer Institute." The text lists cauliflower as one of three "dark green and yellow vegetables" (Had the cauliflower gone moldy?) It also lists apples, with oranges and cantaloupe, as "rich in vitamin C, carotene and fiber." Richness is an inappropriate term for fiber content, something like saying that diluted milk is "rich in water." Sawdust would be the "richest" source of fiber. Apples are low in vitamin C (2 to 7 milligrams per 100 grams) and carotene [40 to 90 international units (IU's) of vitamin A per 100 grams]. The corresponding figures for orange juice are 200 mg per 100 g (vitamin C) and 200 IU's per 100 g (vitamin A) and for cantaloupe, 74 mg per 100 g (vitamin C) and 7700 IU's per 100 g (vitamin A) (*1*). The National Cancer Institute would benefit from the advice of a (traditionalist) registered dietitian. Fruits and vegetables that are not pigmented do not contain carotenoids and hence have no vitamin A activity. This was shown by Steenbock in 1919 (*2*).

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Marshall's article about the great diet debate characterizes one group of protagonists as activists, which they are. However, some on our side are also activists. I was mischaracterized in the article as a traditionalist. I am hardly that, having been correctly characterized throughout my career as an iconoclast. The group of protagonists I am proud to be among are correctly characterized not as traditionalists but as hard-nosed nutrition scientists. As such, we are guided by evidence, not by inference. Evidence to us is laboratory data and clinical trials, as Marshall says. Epidemiologic data are inference.

I did not identify a member of the other side to Marshall as an "activist," but rather as an enthusiast. To state that I am attacking "leaders of a new school" when I attack nutrition enthusiasts for "creative exaggeration" is nonsense. Nutrition enthusiasm is as old as the snake touting the apple in the Garden of Eden. The enthusiasts look at the epidemiologic data and say, "Eat more vitamins A and C to prevent cancer." We look at the same data and say, "Hold it, folks!" Those data show that people (mainly in other countries) eating diets low in carotenoids and vitamin C have a higher frequency of several cancers. One can infer that means we should all eat more vitamins A and C, but it is not evidence that we should. Maybe the dietary content of carotenoids and vitamin C should be raised toward international RDA (recommended dietary allowance) levels (which are generally lower than ours) in those people. Only 10 percent of the carotenoids in food are α- and β-carotene, and only that 10 percent is convertible to vitamin A. In our country, people generally eat so much more than the RDA levels of vitamins A and C that they have liver stores of vitamin A that rise with each decade of life (*1*) and liver stores of vitamin C that last for months if they stop eating it altogether (which is hard to do) (*2*). Moreover, vitamin A is toxic when taken for 7 to 10 years as a supplement at just five times the RDA levels (*3*). Maybe human cancer has nothing to do with dietary vitamins A and C. Maybe it is something else in diets low in carotenoids and vitamin C that promotes certain cancers, or something else in diets high in carotenoids and vitamin C that inhibits them.

To characterize as a "minimal view" our position that there be evidence in humans of efficacy and safety before making a dietary recommendation to the general population is to misrepresent, derogate, and trivialize it. Enthusiasts with their simplistic slogan, "Fiber prevents cancer," do not mention that there are many kinds of fiber—soluble and insoluble, fermentable and nonfermentable. Different fibers can have different effects. Bran is a fermentable fiber. A 20 percent wheat bran dietary supplement increased by more than three times the numbers of colonic adenomas and adenocarcinomas in rats given 1,2-dimethylhydrazine (*4*). The debate is not between "activists" and "traditionalists." It is between enthusiasts who go by inference and nutrition scientists who go by evidence. Moderation is the key. Moderate amounts of vitamins A and C and fiber may inhibit cancer. Excessive amounts may promote it.

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