Letters

Plants and Animals: Vive la Différence

At last someone has said it out loud! ". . . I have come increasingly to wonder if the unity that undoubtedly exists on the biochemical and cellular levels actually exists to anything like the same extent when the higher plants and animals are reached" (Gairdner B. Moment, in a book review, 10 Sept., p. 1225). May this modest seed of doubt burgeon into a long overdue general recognition that a plant is something other than a rudimentary version of an animal.

After years of dissatisfaction with the way general biology textbooks deal with plants, I have come to the conclusion that a basic and profound distortion arises from the fact that these books are organized largely around the problems that animals must meet in their lives as organisms. Having marshalled their thoughts on this basis, the authors then achieve "integration" by considering how plants meet each of the same problems. But the question is never raised of how important these particular problems are to the plants, or whether plants may have other and different necessities of their own. The fact is that in their lives *as whole organisms* plants face major problems that are of no great consequence for animals, just as animals have large problems that do not amount to much in the lives of plants. Obvious examples of these are the maintenance of water balance in plants (important enough for animals but of an entirely different significance and order of magnitude) and digestion and excretion in animals (although people are still looking for complex waste products in plants, apparently on the assumption that since animals have them, plants must have them, too).

I have no quarrel with the current textbook treatment of molecular and cellular aspects of biology, and most authors properly make much of photosynthesis and the difference between "food-making" and "food-getting." But they fail to show how this difference is reflected in the entire structure, organization, and physiology of the two kinds of organisms and their ways of getting along in the world. This is a great oversight, because the long course of evolutionary history shows in the most fascinating way an increasingly clear and multifaceted divergence as the inhabitants of the animal kingdom have become progressively more deeply committed to going out and getting their food and those of the plant kingdom more committed to sitting tight and synthesizing, although some of the Protista inconveniently confuse things by still failing to take a stand on the matter.

By all means let us recognize the amazing unity of life where it exists, as well as the different levels of organization within the world of life. But let us not raise up a generation of biologists who know all about molecules and cells and perhaps even communities, but who know so little about the lives of whole individual organisms that they do not comprehend the ways in which plants are fundamentally different from animals.

BETTY FLANDERS THOMSON
Department of Botany,
Connecticut College, New London

Public Understanding

. . . It is regrettable that the contributions of outstanding members of such groups as the St. Louis Committee for Nuclear Information, the Scientists' Committee for Public Information, the Scientists' Institute for Public Information (Edward L. Tatum, René Dubos, Barry Commoner, and others who have repeatedly offered the "holistic point of view that the citizen needs") were not recognized in Sherburne's plea (editorial, 23 July, p. 381) for an information movement involving direct communication between scientists and public—a new social phenomenon, according to Margaret Mead. The experience of these groups could serve well as pilot projects of the type Sherburne advocates for the National Science Foundation.

While concurring with Sherburne's plea for expansion of the present NSF programs, I would urge that these be directed at the crucial issues: where science leaves off and social judgments take over in the establishment of "permissible" levels of chemical or radioisotopic contamination of the environment; where the responsibility lies in these science-society interactions; the role of the scientist-adviser in governmental agencies; and other such questions. This orientation would be in contrast to the bland isn't-science-wonderful and look-what-it-can-do presentations that typify some of these programs. . . .

MALCOLM L. PETERSON
54 Middlesex Drive,
St. Louis, Missouri 63144

U.S. Research Abroad

The report by John Walsh (10 Sept., p. 1211) on the current status of government support of behavioral science research, and particularly on the Camelot incident, neglects to mention one of the principal shortcomings of Camelot and of much other research on foreign economic development and related problems—the tendency for the United States (either the sponsoring agency or the research agency or both) to act alone in defining the purposes of the research, designing the techniques, carrying out the research, and interpreting the results. Appropriate as this may be in other scientific studies it does not seem likely to produce the best research on problems outside our own country; and certainly it makes for ruffling of political sensitivities, as Camelot so well demonstrates. Other nations and their governments have as much inherent interest in research into their own societies as we have. They are likely to be better acquainted with their own cultures; and more and more they have scientists who can participate in empirical research on their own problems. Moreover, if research indicates a need for change within the foreign country, whether a change of values, of legislation, of procedures, of investment priorities, or of some other kind, it is the government and the nationals of that country who must be persuaded of the desirability of the change before it will take place.