literary criticism. Here is Barzun's crowning example of the "ludic" nature of science:

> . . . to make a pair of glass buckets whirl at a great rate on a machine and, having filled them with excreta, hope that an unfriendly virus will isolate itself. . . .

The vulgarity is perhaps excusable; the cheapness is not.

What Barzun has to say directly about science is essentially complete with that fifth chapter, less than half way through the book, at which point he has fought himself to a standstill. Nevertheless, the following seven chapters are even more interesting than the first five. It seems that not only science is wrong in our modern culture: everything is; we are rotten to the core. "Research" is indeed nonsense when done in kindergarten, and "creativity" is a mockery when taught by a literary hack. The profession of teaching is sick, and not only science is unteachable. Here, in his own specialty (much as he decries the authority of specialists), Barzun thoroughly understands the questions even when he seems to have no answers. Behavioral science, the easiest target of all, comes in for rough bumps, some almost deserved. Again we learn that description, at least *quantitative* description, somehow debases what is described. Here is a fair example of the intellectual level of other arguments:

> Washington in 1774 was not willful, stupid, greedy, or afraid; he simply preferred independence and was "a problem" to the British. . . . How could behavioral science have helped—and on which side?

Let us pass over some of the egregious implications, such as the implication that the revolution was the preference of one man or that behavioral science can study willfulness, stupidity, greed, and cowardice but not preference or independence. The statement is still unworthy of a specialist in verbal (hence mental) clarity. If there had been more comprehension of behavioral aspects of humanity on both sides of the Atlantic in the 1770's, the impulsion for choice need never have existed.

The next chapter, on "misbehavioral science," is admittedly not on science at all in any usual sense. It is a mixed bag of complaints, most of them justified and some fascinating, on the degeneration of language, the arrogance of computers, and the shortcomings of codified law. It then turns out (in chapter 10) that the artist, a hero as an abstraction, is a traitor as a person. The argument is, as usual, somewhat involuted. The artists' treason is ". . . reiterating to the point of nausea the proposition which thinking beholders no longer dispute: the life man has made for himself is not worth living." Art has come to shadow science. It has adopted abstraction (an inhumane horror) and has been driven to method (another). That art is not science; that some artists have been self-impelled to imitate science; that artists are not really very good at science—these are all true, and as literary criticism this is pertinent and interesting. The mind boggles at the logic by which this is imputed to science as *its* fault and adduced, further, as evidence of *its* perversity.

The penultimate chapter returns to a theme not new even to this book: The degeneration of the modern world. Some of Barzun's pages fairly drip nostalgia, and yet, as he had admitted in earlier passages, he knows that the golden age he regrets never really existed. The thesis is that things are not what they used to be, and what's more they never were.

The final passage of the book begins with a magnificent reprise of its opening ploy (the both-sides-of-the-street gambit). The scientific mode of thought "is fully justified by many of its results . . . a triumph of the mind, a masterpiece . . . an unrivaled satisfaction . . . a magnificent spectacle. . . . No man capable of understanding what science accomplishes can repudiate or try to dishonor it without giving up part of his manhood." But then: "It is not the work of science in its purity that is open to objection, but the ideas and feelings and above all the habits which science generates and which, with our complicity, it encourages beyond endurance." After a great deal of cogitation, I *think* that Barzun is saying that science would be just dandy if we never thought about it or acted on it.

Up almost to the end, the criticism is nonconstructive, to say the least. Now, although Barzun is "not redesigning Utopia," he does come up with four constructive suggestions. (i) The person should have times and places of retreat from machines. (ii) Language should be watched, its abstractions and bad metaphors kept outside the home at least. (iii) Houses are nicer if not erected by the cheapest mass production. (iv) The human mind is capable of embracing both science and the arts, even at the same time. The only quarrel I have with these conclusions is that they seem somewhat inadequate, even if not totally irrelevant, in view of all that has gone before.

I have not sufficiently praised Barzun's great literary skill or exemplified his mastery of outrageous hyperbole. Here are three such examples, chosen from a few pages in one chapter, among the many in the book:

> *Focus* was borrowed from photography by the educationists half a century ago and we have not had a clear statement from them since. . . .

> Until this triumph of nomenclature we knew that anything could mean anything; now we must wonder whether something can mean everything. . . .

> Up to that point the public had merely been given the impression that computers afforded every kind of knowledge except carnal knowledge; now we are no longer sure.

I do not remember any previous book that says so many wrong things so well. Barzun is indeed a glorious entertainer.

Plant Physiology

The Germination of Seeds. A. M. Mayer and A. Poljakoff-Mayber. Pergamon, London; Macmillan, New York, 1963. 244 pp. Illus. $6.50.

The Germination of Seeds is an up-to-date, competent review of the physiological aspects of seed germination. The treatment is limited to angiosperms, and germination is defined as the processes that take place in the seed up to seedling formation.

The authors begin with a brief description of the structure of seeds and seedlings and a general review of the chemical composition of seeds. In the third chapter, factors affecting germination are treated in some detail, with information on viability and life span, water, gases, temperature, and light.

The physiological aspects of dormancy, germination, inhibition, and stimulation of seeds are discussed in considerable detail, and the metabolism of germinating seeds as it is similar to, or differs from, other plant metabolism is carefully reviewed. In reading these chapters one is impressed by how little is actually known about these processes and by how limited the

research on them has been. The phenomenon of dormancy in seeds is one aspect that has been studied in great detail, but the more we learn about it the more complicated it becomes.

The effect of germination inhibitors and stimulators on metabolism merits a chapter of its own, since this phase of germination has recently assumed considerable economic importance to agriculture. Unfortunately, far too little is known about the effects of our common herbicides on seed germination.

A chapter on the ecology of germination relates the factors described earlier in the book to actual occurrences in nature.

In the final chapter rest period and dormancy in other organisms are discussed and compared with seeds. Comparing rest periods in different organisms is very difficult, and the authors rightly conclude that much more must be known about the fundamentals of dormancy and many other related phenomena.

JOHN POPENOE
Fairchild Tropical Garden,
Miami, Florida

Agricultural Economics

American Farm Policy. A case study of centralized decision-making. Don Paarlberg. Wiley, New York, 1964. xiv + 375 pp. Illus. $6.95.

College professors who hold high offices in government but see their recommendations repeatedly ignored and rejected by the political process often feel compelled to write something to prove that they were correct all along. Don Paarlberg, an important and loyal member of the Eisenhower Administration, held a key post in the Department of Agriculture for many years and, in the last years of the Administration, served on the White House staff. This book is his presentation of why Secretary Benson's policy should have been followed rather than ignored.

The thesis is simple and straightforward. Paarlberg contends that our commodity price support programs, conceived in the 1930's, are utter failures and that they are incapable of dealing with present or future farm problems. They are failures because they maintain farm prices at higher than market-clearing levels but do not control output, so that we incur huge federal budget expenditures and chronic surpluses under the programs. Moreover, Paarlberg asserts that the programs are the wrong approach and that if they had worked as intended things might be even worse than they are.

The subtitle "A case study of centralized decision-making," is a misnomer. The reason that our farm programs have failed to control production has been the lack of controls to inhibit decision-making by the individual farmer. We have not had centralized decision-making under our farm programs, or even quite centralized price fixing. We have had a policy whereby the government stood ready to buy enough farm products to put a floor under the price levels for the output of the industry, but relatively few strings have been attached to farmers' decisions. In my opinion, it is incorrect to represent our price support policy as an experience in centralized decision-making.

The book is divided into seven sections: The Setting, Defining the Problem, The Politics of Agriculture, The Economics of Agriculture, Commodity Programs, Types of Direct Action Programs, and Toward a Way Out. The sections are short and readable. Even the section in which the author defines the problems and discusses the economics of agriculture is relatively simple, perhaps too simple to adequately treat the industry's adjustment problems.

The sections on commodity program experiences are interesting, although many observers will not concede, as does Paarlberg, that these programs have failed. Moreover, the livestock industry, which he cites as successful without government intervention, owes, in the eyes of most observers, much of its success to the feed grain program, which he says has failed. In fact, his attempt to separate the feed-livestock economy of U.S. agriculture may well cause some agricultural economists to question Paarlberg's entire analysis, because this separation is so against all of the evidence related to the structure of the industry.

The reason for this wrongheaded farm policy lies with politicians and government officials, according to Paarlberg. It is in his treatment of the politics of agriculture that I find his discussion somewhat ambivalent. He professes respect and admiration for civil servants and elected officials, but he cannot avoid numerous unfavorable references to participants in the political processes and he suggests that among these are some of "the sentimental, the selfish, the subversive, and the reactionary" (p. 150). Finally, he says that the "true voice of the people is not always heard by government, and even when it is heard, the voice of the people should not be considered to be the voice of God" (p. 131). This interesting attitude may go far to explain why Paarlberg and his associates had some difficulty in their relationship with Congress.

Those who are familiar with farm policy prescriptions will find nothing new in this book. The "Way Out" is a straightforward, easily recognized prescription—lower farm prices and sell more farm products, improve the opportunities of farm youths by providing better educational opportunities, and, with respect to the land, retire some land from use and apply some conservation programs. Since lowering farm prices is the only one of these that reduces governmental spending, it naturally is the most important. This prescription assumes that the surplus problem is a temporary one which is primarily due to overpricing a few farm products. It assumes there is no chronic problem with respect to our capacity for overproduction, an assumption that will be hotly challenged by many economists.

Although one can quarrel with many of Paarlberg's views on farm policy, nearly an equal number of his views will win almost unanimous support. He is correct in asserting that our price support programs do almost nothing for the very poor in agriculture. Most will agree that international disposal is not a cure-all for our surpluses. And, hardly anyone will argue that government programs should attempt to thwart economic progress in agriculture rather than to help live with it. Many will agree about the direction of adjustment needed in the agricultural industry.

Non-economists who are interested in farm policy will find this book an interesting and readable approach to the subject, but they should not regard Paarlberg's views as universally shared by all specialists in the area. Specialists in the field will find it readable, sometimes penetrating, and sometimes irritating. The ratio between the latter two depend largely on the observer.

DALE E. HATHAWAY
Department of Agricultural Economics,
Michigan State University,
East Lansing