

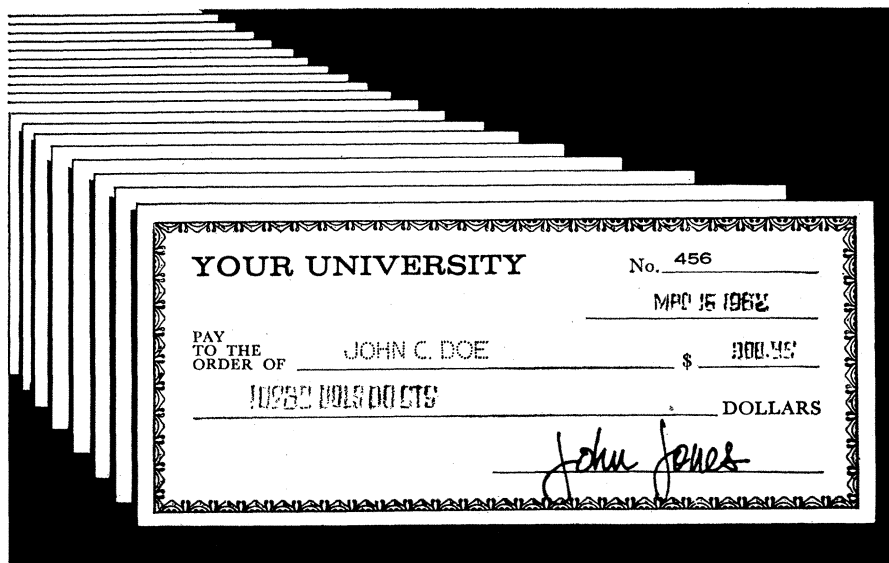
Yardsticks

The editorial "Which yardsick?" [*Science* 136, 397 (1962)] deserves commendation for turning attention to the budgetary problems connected with the financing of research—particularly publicly supported research. It is most certainly correct to urge that greater attention be given to describing quantitatively the costs of research proposals and the most likely benefits to be gained from the undertaking.

The notion that there are benefits and costs of research which ought to be accounted for in deciding where to allocate research funds is the type of assertion which an economist interested in the problems of public decision-making can support. I am puzzled, however, by the rejection of certain economic concepts as a means of reaching the conclusion that we need to possess information on the costs and returns of research. I wish both to question the arguments used against economic comparisons and to point out a variance in the implication of the editorial.

In the first place, it is necessary to distinguish more than one level of budgetary choice. The highest level of allocation decision is between the broad categories of public goods and private goods, or—quote—between the speaker's chosen field and beer or popcorn. It is right and proper that we should debate the issue of allocating our resources between these two categories, and I would defend any scientist who wishes to argue that we should review our expenditures for "research" on the one hand and consumption on the other. Insofar as research is a publicly supported activity whose benefits accrue widely over space and time without much relation between sponsor and beneficiary, there is a good deal of relevance to consumption-research comparisons. I urge that this kind of debate be given its proper perspective, and that it not be implied that all discussions of this sort related to research budgets are irrelevant.

In the second place, the only good argument against dollar comparisons of alternative expenditures is that the benefits and costs of the alternatives cannot be quantified. The editorial assumes that the quantifications can be made, but argues that to make the ensuing comparisons is irrelevant. This position fails to recognize the universal attribute of the price mechanism in re-



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ducing unlike things to the same common denominator. The paradox that the price system places a lower value on the life-giving air we breathe than on hair tonic is not a cogent criticism of dollar-value comparisons. All that can be claimed for money prices is that they order values at the margin of choice. Because oxygen is in such copious supply we do value the marginal units at less than we value our last bottle of much scarcer hair tonic. But take some of our oxygen away and the price of oxygen will soon reflect its

superior use value. (This paradox of value in use and value in exchange puzzled several generations of early economists.)

At the level of budgetary decisions to which the editorial remarks are confined—that is, decisions among choices open to the administrative head of a research organization or of an action agency with related research activities—the kind of cost and return information to be collected has, contrary to the assertion, unlimited usefulness in comparing alternatives. To focus only

on “its own nature, needs, and opportunities” in deciding on the right amount of money for a function can be highly misleading and result in a patently irrational system for accomplishing those things we value most highly. The concept of “optimal support” for all desirable purposes appears to mean that each purpose would receive the amount of support believed ideal by those in charge of it. If we are to follow what on the one hand is rational advice and consider “the characteristics and needs of the work to be done,” then marginal comparisons of alternatives is unavoidable in all rational allocation decisions involving perennially limited public funds.

I find this schism between a concern for rationally gathered information and a rejection of the economic tools for making rational use of that information most disconcerting. I hope this topic will be carried further in a future editorial.

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Book Reviewersmanship

From time to time the readers of *Science* are treated to splendid demonstrations of book reviewersmanship, definable as the art of discussing a book in such a way that the reader quickly forgets it in his admiration for the reviewer. But earlier exercises in this subtle art have been far surpassed by Lloyd Cabot Briggs in his masterful review of—well, I can't remember the name of the book, and I doubt if anybody else can who got as far as the sentence, “I am writing this review in the heart of the Sahara, under conditions which make it not entirely certain that I will get home alive.”

I can hardly wait for his next book review to find out whether he *did* get out alive.

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I must say this is very flattering, although I'm not so sure that a reviewer can properly be recommended for making his readers forget the title of the book he is reviewing! [Kirk-Greene's *Barth's Travels in Nigeria*, *Science* **137**, 31 (6 July 1962).]

L. CABOT BRIGGS

Hancock, New Hampshire

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as a crystalline suspension
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