

AMERICAN ASSOCIATION
FOR THE
ADVANCEMENT OF SCIENCE

Board of Directors

THOMAS PARK, *Retiring President, Chairman*
 PAUL M. GROSS, *President*
 ALAN T. WATERMAN, *President Elect*

HARRISON BROWN	DON K. PRICE
HENRY EYRING	MINA REES
H. BENTLEY GLASS	ALFRED S. ROMER
MARGARET MEAD	WILLIAM W. RUBEN

PAUL A. SCHERER, *Treasurer*
 DAEL WOLFLE, *Executive Officer*

Editorial Board

KONRAD B. KRAUSKOPF	H. BURR STEINBACH
EDWIN M. LERNER	WILLIAM L. STRAUS, JR.
PHILIP M. MORSE	EDWARD L. TATUM

Editorial Staff

DAEL WOLFLE <i>Publisher</i>	HANS NUSSBAUM <i>Business Manager</i>
---------------------------------	--

PHILIP H. ABELSON
Editor

ROBERT V. ORMES <i>Managing Editor</i>	ELLEN E. MURPHY <i>Assistant Editor</i>
---	--

NANCY TEIMOURIAN, *Assistant to the Editor*

News: DANIEL S. GREENBERG, PATRICIA D. PADDOCK

Book Reviews: SARAH S. DEES

Editorial Assistants: GRAYCE A. FINGER, NANCY S. HAMILTON, OLIVER W. HEATWOLE, EDGAR C. RICH, JOHN E. RINGLE, CECIL F. SWEENEY, CONRAD YUNG-KWAI

Staff Assistants: LILLIAN HSU, MARION Y. KLINE, KAY E. KROZELY

Advertising Staff

EARL J. SCHERAGO, *Director*

HAZEL SANDS, *Production Manager*

Sales: RICHARD L. CHARLES (New York, N.Y., PE 6-1858); C. RICHARD CALLIS (Old Bridge, N.J., CL 4-3680); HERBERT BURKLUND (Chicago, Ill., DE 7-4973); Ed BIG (Monterey Park, Calif., CU 3-8600)

SCIENCE, now combined with THE SCIENTIFIC MONTHLY, is published each Friday by the American Association for the Advancement of Science at National Publishing Company, Washington, D.C. SCIENCE is indexed in the *Reader's Guide to Periodical Literature*.

Editorial correspondence should be addressed to SCIENCE, 1515 Massachusetts Ave., NW, Washington 5, D.C. Manuscripts should be typed with double spacing and submitted in triplicate. The AAAS assumes no responsibility for the safety of manuscripts. Opinions expressed by authors are their own and do not necessarily reflect the opinions of the AAAS or the institutions with which the authors are affiliated. For detailed suggestions on the preparation of manuscripts, see *Science* 125, 16 (4 Jan. 1957).

Advertising correspondence should be addressed to SCIENCE, Room 1740, 11 West 42 St., New York 36, N.Y.

Change of address notification should be sent to 1515 Massachusetts Ave., NW, Washington 5, D.C., 4 weeks in advance. Furnish an address label from a recent issue. Give both old and new addresses, including zone numbers.

Annual subscriptions: \$8.50; foreign postage, \$1.50; Canadian postage, 75¢. Single copies, 35¢. School year subscriptions: 9 months, \$7.00; 10 months, \$7.50. Cable address: Advancesci, Washington.

Copyright © 1962 by the American Association for the Advancement of Science.

Which Yardstick?

On the campus, or in the foundation or government office, an ever-present problem in budgeting for science is the question of how much money should be devoted to a particular field or purpose. A frequently used technique for trying to persuade budget-makers to allot a larger amount to the speaker's chosen field is to compare its present level of support with national expenditures for beer, popcorn, movie tickets, or something else that the speaker considers frivolous. (It is frequently a speaker who uses this device, for such comparisons sound better in tones of righteous indignation than they look in cold print.) But is the argument persuasive? And if so, is the persuasion based on anything sounder than a passing emotional reaction? We think not, but we admit to having grown tired of these comparisons, for they seem quite irrelevant to any decisions or practical courses of action.

All that they tell us is a little about relative values for the population in the aggregate, and this only in dollar terms. Even though money is the universally used unit of exchange, the number of dollars involved may be a poor guide for judgments concerning unrelated matters unless other information is also available. By almost any standard, the air we breathe freely is more precious than the hair tonic for which we pay good dollars. Or, as another example, how can we use the fact that the nation spends about \$1.5 billion a year on motion picture theater tickets in deciding how much we should devote to fundamental research? The decision whether or not to go to a movie and the decision whether or not to increase the national research budget are not effective choices open to the individual citizen, the legislator, or the research administrator.

If the amount spent for some different and irrelevant purpose is not the proper yardstick for determining how much should be devoted to a particular end, how about the amount spent for a similar, related objective? This yardstick also has its limitations. Does the amount spent for cancer research tell us how much should be spent for research on mental diseases? Or the amount for the physical sciences, how much should go to the biological sciences? Which amount should be larger? By how much? Why? And will the proper ratio now still serve as a guide next year?

Only in terms of its own nature, needs, and opportunities can we decide on the right amount of money for education, laboratory refurbishment, research in a particular field, or some similar matter. The number of research workers available; the cost of salaries, equipment, and services; the nature of the problems we have the wit to investigate; the increases in knowledge and sometimes the useful applications that we can foresee—these are the guides that can best help in the planning of ideal budgets. If these considerations seem to be less glamorous than a striking comparison, they have the merits of being honest and relevant, and of helping to educate the budget-makers on the problems involved.

This does not mean that all people will agree upon the proper amounts, or that there will be sufficient money to provide optimal support for all desirable purposes. But in considering either ideal budgets or the distribution of an available total, thinking should be focused on the characteristics and needs of the work to be done. The place for beer and the movies is as diversions after the budget-making is done.—D.W.