

AMERICAN ASSOCIATION  
FOR THE  
ADVANCEMENT OF SCIENCE

**Board of Directors**

CHAUNCEY D. LEAKE, *Retiring President, Chairman*  
THOMAS PARK, *President*  
PAUL M. GROSS, *President Elect*  
HARRISON BROWN DON K. PRICE  
HENRY EYRING ALFRED S. ROMER  
H. BENTLEY GLASS WILLIAM W. RUBEY  
MARGARET MEAD ALAN T. WATERMAN  
PAUL A. SCHERER, *Treasurer*  
DAEL WOLFFLE, *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 WOLFFLE HANS NUSSBAUM  
*Publisher Business Manager*

GRAHAM DUSHANE  
*Editor*

JOSEPH TURNER ROBERT V. ORMES  
*Associate Editor Managing Editor*

ELLEN E. MURPHY, *Assistant Editor*

NANCY TEIMOURIAN, *Assistant to the Editor*

*News:* HOWARD MARGOLIS, PATRICIA D. PADDOCK

*Book Reviews:* SARAH S. DEES

*Editorial Assistants:* NANCY S. HAMILTON, OLIVER W. HEATWOLE, EDGAR C. RICH, JOHN E. RINGLE, CONRAD YUNG-KWAI

*Staff Assistants:* GENEVIEVE M. KIRBY, JEAN P. D. PIEKNIK

**Advertising Staff**

EARL J. SCHERAGO, *Director*

BERNICE SCHWARTZ, *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); DILLENBECK-GALAVAN (Los Angeles, Calif., DU 5-3991)

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 duplicate. 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¢. Cable address: Advancesci, Washington.

Copyright © 1961 by the American Association for the Advancement of Science.

## New Categories for Old

Man, according to one famous sophistry, is a featherless biped with nails. Like a bird, man walks on two legs, but unlike a bird, he has no feathers. The possession of nails is mentioned in the definition to avoid confusion between men and plucked chickens. Much the same logic has characterized the study of some newer kinds of creatures. Recent history has seen Pentagon sophists produce similar definitions in their efforts to have missiles and other new weapons encompassed in an Army-Navy-Air Force scheme of things. But just as there are more effective ways to advance biology than by grouping together man and fowl, so there may be better ways to understand our military problems than by thinking in terms of land, sea, and air categories.

Just such an effort to provide a new set of categories is now under way in the Defense Department. Secretary McNamara and his controller Charles Hitch, an economist formerly with the Rand Corporation, have introduced the concept of what they call "program packages." There are seven packages, and the packages group together different military weapons and tasks in terms of similar purposes. Thus, one group is the Central War Offensive Forces program package. It includes both land-based and sea-based missile forces as well as certain aircraft forces, all of which taken together constitute our atomic retaliatory unit. Another group is the General Purposes Forces, which includes expeditionary units for fighting limited wars.

Research and development, which is understood to include all testing and evaluation of prototypes prior to operational use of a new weapon, enters the scheme in two ways. Work associated with a particular element, like the Polaris missile, is classified with that element in the appropriate package. Research efforts not so readily classified, like present military space projects, are grouped in a special program package devoted to "other" research and development.

The package-program approach cuts across not only present service classifications but also present accounting titles—personnel, maintenance, procurement, and so on. Thus, to help evaluate a possible new weapon, the new approach would provide an estimate of research and development costs, including the price of laboratory and test facilities; an estimate of the outlays for the initial equipment and training necessary to bring the new weapon into operational use; and an estimate of the recurring costs necessary to maintain the weapon once it is in use.

Improvements in planning, as might be suspected, did not start from scratch with the Kennedy administration. The idea of package programs builds on procedures that have been developing in the Defense Department during the past few years, particularly in the research and development section. Concerning earlier programing, Harold Brown, the scientific director of this section, told a congressional committee that timetables for development had proved right most of the time, but that efforts at estimating costs had been less successful. The present hope is to expand and improve on earlier efforts. What is wanted is a scheme that will explicitly array, in terms of military effectiveness and costs, the real choices among present weapons and possible future weapons.—J.T.