SCIENCE

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Board of Directors

CHAUNCEY D. LEAKE, President THOMAS PARK, President Elect PAUL E. KLOPSTEG, Retiring President HARRISON BROWN H. BENTLEY GLASS MARGARET MEAD DON K. PRICE MINA REES ALFRED S. ROMER WILLIAM W. RUBEY ALAN T. WATERMAN PAUL A. SCHERER, Treasurer DAEL WOLFLE, Executive Officer

Editorial Board

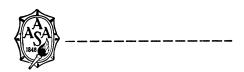
KONRAD B. KRAUSKOPF Edwin M. Lerner Philip M. Morse H. BURR STEINBACH WILLIAM L. STRAUS, JR. Edward L. Tatum

Editorial Staff

DAEL WOLFLE, Executive Officer GRAHAM DUSHANE, Editor JOSEPH TURNER, Assistant Editor ROBERT V. ORMES, Assistant Editor

BETHSABE ASENJO, CHARLOTTE F. CHAMBERS, SARAH S. DEES, NANCY S. HAMILTON, OLIVER W. HEAT-WOLE, HOWARD MARGOLIS, ELLEN E. MURPHY, BARBARA SUTHERLAND, NANCY TEIMOURIAN, LOIS W. WOODWORTH, CONRAD YUNG-KWAI

EARL J. SCHERAGO, Advertising Representative



SCIENCE, which is 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. The joint journal is published in the SCIENCE format. SCIENCE is indexed in the Reader's Guide to Periodical Literature.

Editorial and personnel-placement 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 or for the opinions expressed by contributors. For detailed suggestions on the preparation of manuscripts and illustrations, see *Science* 125, 16 (4 Jan. 1957). Display-advertising

Display-advertising correspondence should be addressed to SCIENCE, Room 740, 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. If possible, furnish an address label from a recent issue. Give both old and new addresses, including zone numbers, if any.

Annual subscriptions: \$8.50; foreign postage, \$1.50; Canadian postage, 75¢. Single copies, 35¢. Cable address: Advancesci, Washington.

Copyright 1960 by the American Association for the Advancement of Science.

Research with Human Subjects

It is the nature of scientific inquiry to push towards the limits of the phenomena being studied, and the limits of research on human behavior will surely entail some danger to the subjects. As a current example, what kinds of performance can be expected of an astronaut in the super-solitary confinement of space? Under what circumstances will integrated, rational behavior break down? Such questions can be answered only by putting experimental subjects under real stress, and the subjects who volunteer to help find the answers, even under simulated and earth-bound conditions, are running some risk of personal damage. So are subjects in studies of other types of stress, fatigue, or the factors that induce abnormal mental states.

Most discussions of the legal and moral problems of the use of human subjects have been written from the medical point of view. Medicine has the most experience with human subjects, but in several respects the medical experience provides a quite inadequate guide. In testing a new medical or surgical technique on human patients it is customary to explain the nature of the technique, its possible dangers, and its possible beneficial results, and to secure the patient's consent before the new technique is tried. In psychological research, neither explanation nor consent can be so easily handled. Explanation of the nature or prospective results of a psychological experiment may vitiate the results. And if the experiment cannot be fully and honestly explained, to what has the subject consented? Or has he in fact consented at all?

There is another difference. A new medicine or operative technique is ordinarily tried out on ill patients who may themselves be directly benefited. In contrast, research of the type being considered must frequently be carried out on normal and healthy subjects who may never directly benefit from the experiment. Clearly the differences are too great to allow using the precedents of the physician-patient relationship as a total guide in handling the problems of the experimentersubject relationship.

In a thoughtful analysis of this issue, the *Duke Law Journal* (No. 2, 1960) recently offered a partial solution with the concept of "liability without fault." Under this concept, if a subject is damaged as a result of participation in a psychological experiment he would be entitled to be made whole, through treatment or rehabilitation, or to receive compensatory damages. Thus the subject would be protected. The experimenter would also be protected. He would not be considered to be at fault, but rather to have been acting in the interest of society. Thus society, through appropriate government channels, would assume the costs of rehabilitation or compensation just as society, also through government channels, supports most of the experimentation for which the concept of liability without fault would be appropriate.

Some practical problems remain, such as which experimenters would be protected and how psychological damage would be assessed. But the fact that such details and the underlying legal and moral issues are being seriously considered constitutes somber evidence that scientific inquiry will prove increasingly powerful in gaining knowledge of man himself.—D.W.