

AMERICAN ASSOCIATION
FOR THE
ADVANCEMENT OF SCIENCE

Board of Directors

PAUL B. SEARS, *President*
LAURENCE H. SNYDER, *President Elect*
GEORGE W. BEADLE, *Retiring President*
WALLACE R. BRODE
PAUL M. GROSS
GEORGE R. HARRISON
MARK H. INGRAHAM
PAUL E. KLOPSTEG
CHAUNCEY D. LEAKE
MARGARET MEAD
THOMAS PARK
PAUL A. SCHERER, *Treasurer*
DAEL WOLFFLE, *Executive Officer*

DAEL WOLFFLE, *Executive Officer*

GRAHAM DUSHANE, *Editor*

CHARLOTTE V. MEETING, *Assistant Editor*

Editorial Board

MARK H. ADAMS KARL LARK-HOROVITZ
WALLACE R. BRODE EDWIN M. LERNER
BENTLEY GLASS WILLIAM L. STRAUS, JR.

Editorial Staff

SARAH S. DEES, JUNE M. FORBES, OLIVER W.
HEATWOLE, YUKIE KOZAI, JEAN MCCARTHY,
ELIZABETH MCGOVERN, DAVIS S. MOORE, ELLEN E.
MURPHY, ROBERT V. ORMES, BETHSABE PEDERSEN,
MADELINE SCHNEIDER, JOSEPH TURNER, JACQUELYN
VOLLMER

EARL J. SCHERAGO, *Advertising Representative*

SCIENCE founded in 1880, is published each Friday by the American Association for the Advancement of Science at Business Press, Lancaster, Pa. Entered at the Lancaster, Pa., Post Office as second class matter under the Act of 3 March 1879.

SCIENCE is indexed in the *Reader's Guide to Periodical Literature* and in the *Industrial Arts Index*.

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, book reviews, and illustrations, see *Science* 123, 714 (27 Apr. 1956).

Display-advertising correspondence should be addressed to SCIENCE, Room 604, 11 West 42 St., New York 36, N.Y.

Change of address: The notification should reach us 4 weeks in advance. If possible, please furnish an address stencil label from a recent issue. Be sure to give both old and new addresses, including zone numbers, if any.

Annual subscriptions: \$7.50; foreign postage, \$1; Canadian postage, 50¢. Single copies, 25¢. Special rates to members of the AAAS. Cable address: Advancesci, Washington.

The AAAS also publishes THE SCIENTIFIC MONTHLY.



The Witness for Science

The last two issues of *Science* reviewed two cases in which the Federal Trade Commission brought charges against products that appeared to the commission to be without merit. In both cases, scientists appeared as Government witnesses, and in both cases their testimony was argued away by the trial examiners. One examiner gave greater weight to favorable testimony of users. The other concluded that since the scientist witness admitted that he did not know everything that might be discovered in the future "... we must not take the risk of interfering with the development of a device which may prove to be the first practical application of a scientific principle heretofore undiscovered."

The scientist witnesses in the FTC hearings were put into a somewhat unusual position by proceedings that seemed to put on trial the methods and findings of scientific tests rather than the value of the products against which charges were brought. Under these circumstances a scientist is likely to carry with him the standards of truth and caution that are appropriate in the laboratory. In so doing, he runs the danger of giving testimony that is misleading or that can easily be distorted. "Is there," he is asked, "any possibility that this scientific law—say, the second law of thermodynamics—may someday be found to have exceptions?" "Yes," he answers, for he knows the impossibility of proving the negative. But his answer invites opposing counsel to contend that his client may have hit upon something that is unknown to scientists.

This situation contrasts with the more familiar one in which a scientist (or a specialist in some other field) is qualified as an expert and then allowed to present his expert judgment. The law, in this case, expects proof beyond a reasonable doubt but no more claims absolute certainty than does science. It is theoretically possible that two rifles might be so similar that the markings they leave on bullets would appear to be identical; but the probability is so remote that the expert's testimony that two bullets appeared to be fired from the same gun is accepted as evidence. It is weighed against other evidence, but it is not discredited on the ground that the expert's judgment might possibly be wrong.

It is more comfortable to be able to give one's conclusions than to have to justify to a lay audience the means by which those conclusions were reached. But, in the long run, the necessity of justification may be a healthy one. Too much of science has been presented to the public in terms of end-results, and too little in terms of process. Scientists have a problem of learning to give testimony that is accurate and true in the scientific sense and that is also meaningful and useful to a judge, to a jury, or to the general public. This is a difficult task, one that the scientist frequently makes more difficult by insisting on using a vocabulary and a set of concepts that his hearers do not understand.

The scientific witness in a legal hearing and—more importantly—the witness before the jury of public opinion will succeed better in securing understanding of the methods of science and of how to discriminate between scientific evidence and the misleading claims that are dressed up to look like science when he translates his ideas and specialized jargon into terms that his audience can understand.—D. W.