8 April 1960, Volume 131, Number 3406

SCIENCE

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 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.

Between Two Extremes

With science supporting an ever expanding military technology, many people in this country are wondering to what extent American scientists should assume responsibility for the uses to which the government puts their discoveries and talents. It has always been possible, of course, to speak of pure research, just as it has always been possible, we suppose, to speak of the pure act of sitting down to a meal and consuming it with impeccable table manners. But any piece of behavior can acquire moral properties, given the appropriate circumstances—even sitting down to eat a hamburger, as recent developments in the South have shown.

One view of the scientist's responsibility for the social consequences of scientific truths is that this responsibility ends with the scientist's willingness to do work directly or indirectly for the government, including work on weapons. According to this view, being a good scientist no more gives one special privileges in determining national policy than being a good information clerk at an airport entitles one to select destinations for travelers. The area of special competence of scientists lies in the discovery of technical facts; decisions of public policy rest with elected or appointed public officials.

An opposite opinion concerning the obligations of scientists holds that scientists should consider the possible consequences of any piece of research before it is begun, and if the research is judged more a threat to the country, or humanity at large, than a benefit, they should refuse their services. A man cannot delegate to a superior the responsibility for the moral consequences of his acts, the second view claims. To be sure, to predict future applications of new discoveries calls more for the talents of a prophet than for those of a scientist. No one now knows to what uses, or abuses, the fall of parity in physics may some day prove amenable. But somewhere along the line, basic research becomes applied research, and forecasts about the uses of discoveries become something more than anybody's guess.

Between the two opposing positions lies a third position which holds that at least some scientists, although they fear the dangers posed by a further increase in military power, have the duty to work on projects that the government deems necessary, but that scientists also have the duty to state their opinions on matters lying outside science. If this is the age of specialization, so this argument runs, it is also the age of specialists working together on teams. Public officials should have the final word, but any attempt to understand the full range of consequences—military, political, economic, and moral —of new advances in research, requires the views of the men who understand those advances best.

It is this third position that expresses our own convictions, and that seems to express the convictions of most of the persons in this country who are presently concerned with these problems—although, admittedly, agreement on general principles does not necessarily imply agreement on particular cases. The first position errs because, pushed to its conclusion, it turns the citizen's obligations to the state into despotism; while the second position errs because, if pushed, it turns the moral integrity of the individual into anarchy. The third position seeks the mean between the scientist's assuming too little responsibility for the consequences of his research and his assuming too much responsibility.—J.T.