

Letters

Right-Wing Bibliography

I would like to attempt to set the record straight on the two points you make in your review of the pamphlet "The American Right Wing" [*Science* **134**, 2025 (22 Dec. 1961)] that concern me personally.

1) There is no basis for the inference you seem to draw concerning the relation of our report to the Fund for the Republic. The Fund for the Republic made available a small grant to enable me to expand the "Tensions file" collection at the University of Iowa, particularly the writings of the American right wing and their relations to southern groups on the issue of segregation. As a token of appreciation for the grant (although it had not been requested by the Fund), we compiled an annotated bibliography of the American right wing and sent a copy to the Fund. This bibliography carried on its title page the words, "A report to the Fund for the Republic, Inc." They thanked us for the bibliography, and that was that. We neither asked for nor expected the Fund's endorsement, reaction, or judgment. Robert M. Hutchins's reply to you (mentioned in your review) was entirely correct. When our report was published, our title page was used by both publishers (Illinois and Public Affairs Press), as was proper.

Thus, although our report was a report to "the Fund for the Republic, Inc.," this does not mean that the Fund endorsed, approved, or otherwise agreed or disagreed with the report. It just was not that kind of situation. Furthermore, in the introduction I stated this relation clearly in the following sentence: "Although originally prepared as a report to the Fund for the Republic and initially issued in the Occasional Papers series of the University of Illinois Library School, this work is not, of course, a report of either organization. The authors alone

are responsible for the findings and interpretations presented in these pages."

2) The conclusion you draw from our statement, that we were "not for or against this body of opinion," is not justified. Both the late Sarah M. Harris and I tried to do a fair and impartial job of reporting the views of the American right wing. We worked very hard to discipline ourselves so that we could keep our personal feelings out of the report. This would be the aim of any scholar under the circumstances, and I think we should be judged by the degree to which we attained impartiality. It is incorrect for you to conclude from this that our personal views were neutral. They were not neutral at the time we wrote, nor are mine neutral today. However, I think our own personal views have no place in this report.

RALPH E. ELLSWORTH
*University of Colorado
Libraries, Boulder*

Science of Human Survival

I am writing to express my approval of, and general agreement with, the "position paper" of the AAAS Committee on Science in the Promotion of Human Welfare [*Science* **134**, 2080 (29 Dec. 1961)]. I should also like to express my disapproval of the editorial of 12 January [*Science* **135**, 68 (1962)], which seemed in doubtful taste. You are, of course, entitled to your own opinions, but it would seem that you owe the authors of the paper you criticize the courtesy of reading it carefully before attacking it.

My own reading of the paper, and subsequent discussion with Barry Commoner, chairman of the committee, gave me to understand that the committee is not proposing that there are "experts who will solve the problems";

moreover, it is explicitly stated that "whether society shall continue to rely on war . . . is a social decision to which scientists have no greater or lesser rights and duties than other citizens." The point of the paper is that there are issues which cannot be decided (rationally) by citizens unless they have information of a more or less technical nature. Scientists, as I read the paper as saying, have the responsibility to translate this information into language readily understandable by the nonscientifically trained, and to present it, and keep presenting it, until a significant portion of the populace is aware of the facts which should determine their decisions. A science for human survival could very well be a "science of communication." I have met surprisingly large numbers of university faculty members who are not scientists but are, presumably, well educated, and who do not, for example, know that "megaton" means "million tons of TNT equivalent." Such people rarely have any hesitation about declaring themselves for or against some government policy such as the shelter program or the resumption of atmospheric nuclear tests, yet I cannot see how it is possible for them to contribute anything rational to public discussion. And certainly their decisions, and their votes, if based on demonstrated ignorance, cannot represent rational choices.

If we are to preserve at least some semblance of a democracy in this country—and I take it that at least most citizens would agree that we should try to do so—then an increasing number of decisions are going to have to be made by virtually every citizen on matters that will demand increasing knowledge of scientific and technical developments. Since for many years these decisions will be made mainly by a large group who cannot resume their formal education, the schools cannot be expected to do the job of educating this public. The press cannot do it either, without considerable aid from the scientific community, since many writers and editors (especially newspaper editors) themselves lack the information, training, and background needed to evaluate the raw data, if even they have the data.

It is necessarily the case that it becomes the responsibility of scientists not only to gather data—their traditional role—but to evaluate and interpret it, not only for their colleagues in the convenient and codified language of science but for the public, in lan-



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guage that can be understood by the instructor of Latin and Greek, by the housewife, by the truck driver, and perhaps even by the congressman.

I fail to see how calling for an interdisciplinary group to recognize this need and to begin doing something about satisfying it could contribute "little to science or to survival," or how it could possibly "do some mischief," as you charge that it might. Your editorial, however, is another matter. As a small voice of unreason, it could do considerable mischief, if listened to; and the human race (even the largely scientific audience of *Science*) has demonstrated itself often prone to listen to the voice of unreason. I can only hope that your voice will fall on deaf ears, at least with respect to this matter, while the AAAS committee's voice falls upon responsive ones.

PAULA FOZZY

Bulletin of the Atomic Scientists,
Chicago, Illinois

The editorial of 12 January is to be commended for promoting discussion of the statement by members of the AAAS Committee on Science in the Promotion of Human Welfare, calling for a "science of human survival." Yet I feel that its attack on the statement is unjustified.

The editorial seems to say that the statement misleads the general public, at whom it is indirectly aimed, by suggesting that a concerted scientific effort could solve the problem of avoiding modern war, when in fact success in such an effort is precluded by a lack of comprehensive and accepted social theories. Probably no one would argue the need for more powerful theories of social behavior. But surely the history of science is dotted with episodes when attention was drawn to urgent problems for which there were no good theories. Often general theories arose out of concentrated effort on just such problems. Is it unimaginable that the same process might occur in the area of human conflict; that efforts of a large number of scientific intellects, from a variety of disciplines, concentrated on the urgent problems caused by the threat of modern war, might lead to new and more powerful theories of social behavior in general?

If the statement is aimed indirectly at the general public, it addresses itself directly to scientists and invokes their responsibility for the problems posed by modern war, the power for

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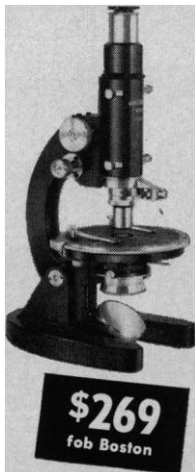
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which comes from the products of science. By outlining these problems with clarity, and by calling on scientists to respond to the possibilities of their solution, the statement serves a constructive purpose that outweighs any possible sense of exaggerated confidence in the powers of science which the general public might read into it.

THOMAS G. SPIRO

419 South Washington Avenue,
Whittier, California

The article on a "new collaborative science, the science of human survival," and the editorial on the same topic are both stimulating and welcome.

The call to natural scientists and social scientists to solve the complex problems of modern war, before that problem dissolves human beings on a mass scale, might be more complete if the call to action included appropriate reference to research in nonviolence, to which M. K. Gandhi devoted his life, and to research in conflict resolution, such as that being carried on at the University of Michigan. Experiments in conflict resolution by a number of groups, such as the Society of Friends (Quakers), to mention only one, contribute to a basis for the "new . . . science of human survival."

Out of the work of Gandhi and various research and extension teams active in the field of conflict resolution has come a body of comprehensive theory for the science of human survival (see the *Journal of Conflict Resolution*). The fact that this theory does not appear to command general acceptance in the natural sciences does not place the existence of the body of theory in doubt, but rather points to the phenomenon of human resistance to application of nonviolence concepts and techniques in new areas and on a global scale. The conversion of this resistance into enthusiasm for free and responsible experimentation in the science of human survival can surely not be attempted without the philosopher and the saint, as well as the social scientist and the natural scientist. Two or more of these are occasionally to be found combined in a rare individual, who is by virtue of this versatility particularly useful in the endeavor to resolve international conflict without nuclear war.

FRANCIS D. HOLE

Soil Survey Division,
Geological and Natural History Survey,
University of Wisconsin, Madison

I wish to express strong support for the statement of the Committee on Science in the Promotion of Human Welfare and disappointment that your editorial regarding this statement was rather lacking in enthusiasm.

This is no longer a period of history where there can be "business as usual." The dangers and promises were never greater. It is the responsibility of individuals who by training and endowment are equipped to recognize this and to see their obligations, to themselves and to civilization, to act. Formation, activation, and support for such a committee can be part of a process of transforming humanity into such a committee-at-large.

EUGENE KAELLIS

775 Avenue Z, Brooklyn, New York

I would like to comment on the editorial of 12 January, which was critical of the call for "a new collaborative science, the science of human survival."

It seems premature to say that because no such science exists as yet, none can be developed. We know that the cross-fertilization of one scientific discipline by another can lead to new developments which could not be conceived within the isolated field. One well-known example is the solution of the important problem of DNA structure. Another is the burgeoning use of the computer sciences in almost every field one can think of. In both of these instances there was a specific problem to solve, of importance to human progress—in the first case, an obstacle in the way of understanding the nature of life, and in the second case, a need to save human time and effort.

The problem of human survival is a concrete problem deserving more consideration than many lesser goals. In fact one might say that all other goals must be lesser, by definition.

In this light, could we not regard all sciences not only as ends in themselves but also as tools to be used in the solution of the problems of the human race?

With the last paragraph of the editorial I must especially disagree. The image of science in the public mind is becoming more and more an image of weaponry and destruction. This call by scientists for a solution to wars is one of the few steps taken so far to counteract that image.

SIDNEY O. KASTNER

39-F Ridge Road, Greenbelt, Maryland



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I want to reply to Fozzy and to Spiro.

In reply to Fozzy: the six authors, in the concluding section of their document, argue that scientists have two special responsibilities, (i) to inform the public about the technical facts relevant to the character of modern war, and (ii) to establish a "new collaborative science, the science of human survival."

Fozzy addresses herself to the first matter. I agree that scientists have a responsibility to interpret science to the public, although I do not think that anyone deserves a medal these days for simply *saying* that scientists have this obligation. My editorial, however, was concerned with the second matter.

The six authors, speaking explicitly as scientists and seeking indirectly to reach the general public, say flatly: "It lies within the power of science . . . to discover new social inventions to replace [modern war]." But how can the six authors know this? I hope that science proves to have such power, or even that politicians and moral leaders prove to have this power. I do not know, however, whether science *does* have this power. I do not even know whether science, if called upon, would have the power to get, say, the Administration's bill for federal aid to education through the House Rules Committee.

In reply to Spiro: I found it necessary to remind readers that there are no theories in the social sciences which are comprehensive and which at the same time command the general acceptance so common in the natural sciences, because I wanted to show the poor quality of one of the document's illustrations. The six authors cite the International Geophysical Year as something illustrative of the proposed collaborative science. But the IGY illustrates nothing relevant to the proposed science. Electromagnetic theory and other comprehensive physical theories were on hand to guide the study of the earth, but no counterparts to such theories exist to direct the work of the science of survival.

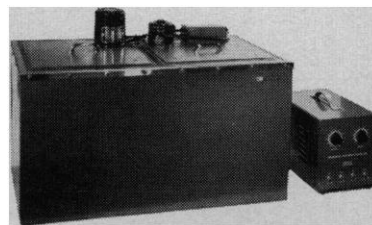
I did not go on to discuss how one encourages the production of comprehensive theories in physics or in other sciences. But even the staunchest enthusiasts of the IGY do not believe that this same kind of coordinated, massive assault would be the best way to proceed in physics in an effort to produce, say a meaningful unified field theory.

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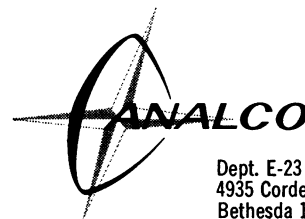


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As a kind of general reply to my critics, let me be clear about one point. I make so much of the extravagance of the authors' claims because the document is addressed indirectly to the general public. I do not mean to say that a science of man and his institutions is impossible. Such a claim would just substitute one extravagance for another. I am not against hope, only against misinformation. Elsewhere in the document the six authors are not quite so extravagant in their claims. They ask: "Can such a complex scientific assault . . . really succeed? No one knows." But inconsistency in claims is just as irresponsible in a document as extravagance of claims.—J.T.

Adaptive Radiation

The principle of adaptive radiation, early championed by Henry Fairfield Osborne, and later by Matthew, Lull, and Romer, states that the descendants of a generalized ancestral type spread out into many different environments with a great variety of adaptive characters. The variations in structure are

to be correlated with adaptation to different habits, as much as to the habitat. The general principle has provided a sound basis for understanding the evolution of the tetrapods.

Adaptive radiation has also occurred in flowering plants, as shown by Andrews of Australia (1913, 1914) and Bews of Africa (1925, 1927). In general, however, botanists have largely ignored the phenomenon even though it is one of the most important and fundamental aspects of all evolution. In this connection there have recently appeared two discussions of adaptive radiation in flowering plants. The one by me [in *Evolution of Life* (University of Chicago Press, 1960), pp. 237-243] devotes several pages to it in an analysis of the larger problem of the evolution of flowering plants. The paper by Hui-Lin Li [*J. Wash. Acad. Sci.* 50, (1960)] is an essay devoted solely to the problem. These discussions are sufficiently similar to require comment.

The similarity is attributable to the fact that I had access to Li's manuscript in the early 1950's, at which time I was asked to appraise it. At that time I was giving part of a general course in paleontology in which adaptive radia-

tion of flowering plants, as discussed by Bews (1927), was reviewed for the students. Since some of Li's examples nicely supplemented those that I was already using, I incorporated some of them in my lecture material. Several years later, when writing my article on the evolution of flowering plants which appeared in 1960, I included the data from Li's manuscript in that discussion. Through an inadvertent oversight, I failed to credit Li. This was indeed unfortunate, and I deeply regret the omission. I am therefore writing this letter to insure that Li receives credit for his contribution.

DANIEL I. AXELROD

Department of Geology,
University of California, Los Angeles

Carbon Dioxide Production in Asparagus

Dedolph, Wittwer, and Tuli, in "Senescence inhibition and respiration" [*Science* 134, 1075 (1961)], reported rates of CO₂ production for asparagus in the range of about 1.5 to 3.0 mg of CO₂ per kilogram per hour at 21°C. These values are about 1/100 as large as those reported in the literature for about that temperature [see H. Plate-nius, *Plant Physiol.* 17, 179 (1942); S. Tewfik and L. E. Scott, *J. Agr. Food Chem.* 2, 415 (1954); J. Schweigart et al., *Vorratspflege u. Lebensmit-telforsch.* 2, 28 (1939)]. Insertion of a correction in *Science* is desirable, to prevent the apparently erroneous data from permanently entering the literature.

WERNER J. LIPTON

U.S. Agricultural Marketing Service,
Fresno, California

Pictorial Atlas

Walter Deshler (University of Maryland), in his review of *Life Pictorial Atlas of the World* [*Science* 134, 1234 (1961)], regrets that "the price is sufficiently high to limit its distribution to institutions." I doubt that this will be true, particularly in view of the fact that 300,000 individuals have already purchased this atlas, sight unseen, at prepublication prices of approximately \$14, \$20, or \$21 (as compared to the publication price of \$30).

ROBERT T. JORDAN

Council on Library Resources,
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