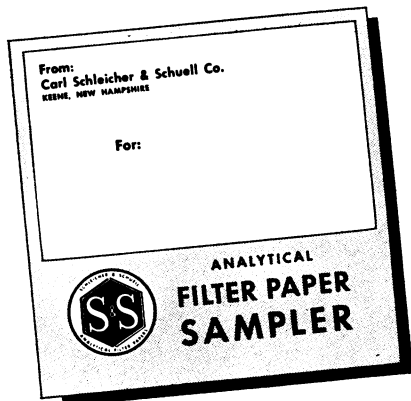


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Letters

Scientists and Responsibility

Science deserves the gratitude of scientific men of good will everywhere for publishing Bertrand Russell's magnificent little speech, "The social responsibilities of scientists" [131, 391 (1960)]. Russell's message is as old as the problem with which he deals, but never before in human history has the need for saying it been more acute. Let us hope it is heard widely, "loud and clear."

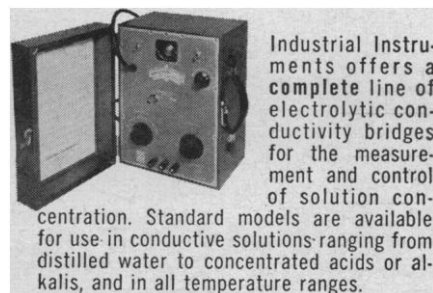
Every scientist has to make a living and, if he is to pursue a scientific career, must have the wherewithal in equipment, money, and freedom to carry out his work. Increasingly, however, he is faced with an ever-narrower orbit of choice of problems to be investigated and scope and emphasis of investigation. Rewards of wealth and position for "popular" or "approved" research in terms of policy needs of government and industry burgeon in tantalizing proportion as rewards for "unpopular" or "disapproved" or "impractical" research shrink alarmingly. The university, traditional stronghold of scientific freedom, becomes almost pervasively dependent upon the largess of government and industry for research funds already earmarked for official or business purposes.

We in the social and behavioral sciences, though not often involved directly in the mad marathon of devising an ever more horrendous armamentarium, also bear responsibility for the consequences of our works. Had we not known this before, the scathing rebukes of a C. Wright Mills should have made it apparent (though self-conscious contentiousness tends to dilute the effectiveness of his argument). Like the physical scientists we are engaged in large numbers in research on "applied" — or what some of us term "action" — problems, in which funds are supplied by government and industry or by foundations geared often to similar objectives. Many of us find satisfaction in being able to use our skills in efforts which we hope will alleviate or change some area or aspect of a painful human condition. Simultaneously we may be subject to pressures, however delicately subtle, to orient data collection and findings in the direction of enhancement of, say, the institution or organization in which the investigation occurs. Thus, strong and persistent effort is required to maintain scientific integrity and insure that *all* results will see the light of day, and not alone those which confirm existing policies.

While sporadic symposia have occurred in the past (and frequently in such groups as the Society for Applied

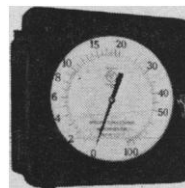
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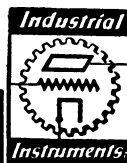


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Anthropology), I urgently propose that each of the professional organizations and academies in the social sciences enter the subject of scientific social responsibility for rounded and open discussion in its meetings and journals.

DAVID LANDY

223 Grant Avenue,
Newton Centre, Massachusetts

Physics has not always been an important profession. What we seem to find important is some knowledge of ourselves in relation to whatever and whoever interacts with us most strongly, rather than knowledge of the simpler and more remote world which physics describes. Even the practical results of physics, while historically pertinent, have seldom been a dominant factor in men's lives. When a physicist, in the past, had to decide on a job, his decision was of concern mainly to himself. Others, including military leaders, were not too strongly affected, either practically or otherwise. They had worse worries.

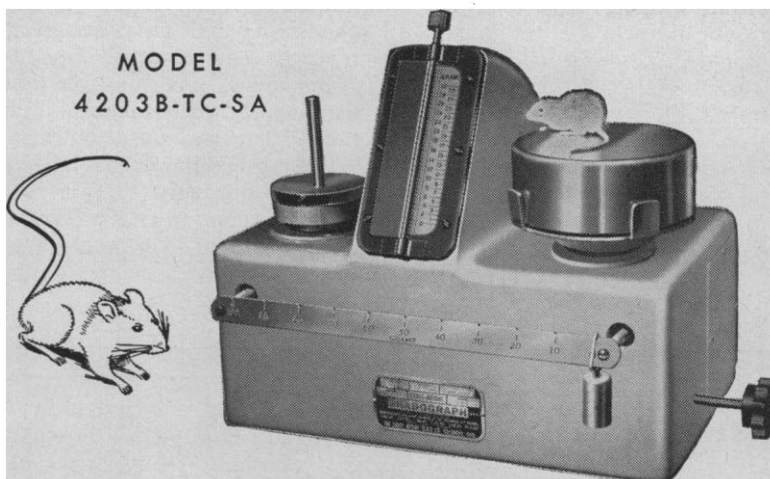
This is no longer so, of course. We do not know whether a nuclear war would essentially destroy the human race, or whether it would appear to our descendants as harmless compared to what they could perpetrate. We do know that millions of men and women may suffer and die owing to the work of our hands and minds.

If nuclear armaments clearly led to nuclear war, the moral choice would lie between wholesale death and destruction, on the one hand, and whatever these items may purchase on the other. That choice seems clear: working on nuclear armaments would be immoral. We could then note that armament races, in the past, have always led to war, and thus consider the moral question of what to work on as solved.

This is not a valid conclusion, however: everything in the past has led to wars—armament races, *pax Britannica's* and disarmament treaties alike. We have wound up fighting each other whenever some greater force has not prevented us. Now, there is no way to decide whether the fear of nuclear armaments has prevented a third world war up to now. Neither can we foretell whether the balance of terror induced by nuclear armaments will provide the pressure needed to force us into a world organization which can effectively prevent war. Since we do not know the answer to these questions, we cannot take some guess and make it serve as the basis for a moral decision. All we know is that nuclear weapons exist, and, whether the terror is balanced or not, there is certainly plenty of it to go around. What should we do then?

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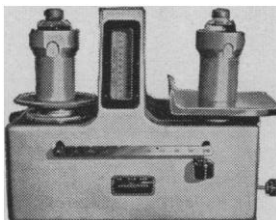
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be kept alive and in force if courage and generosity are forthcoming from some of those concerned. We can, therefore, work to the end of increasing these qualities, along with all men. We have a special incentive to do so: if world war does come, it will indeed be better for physicists if they had never been born. That will be their own opinion as well as most everyone else's! The very possibility makes us wish "not to learn war any more," in the phrase of Fox's celebrated statement to Charles II, and to turn to morally safer pursuits.

We can use our special knowledge to

make the consequences of war as clear as possible. We can advise framers of agreements and makers of policy concerning the technical pitfalls that we know about, so that the agreements and policies will not fail through any ignorance or conceit of ours.

But none of this is physics. Doing these things does not answer the question, Shall we work on armaments? What jobs shall we do?

I am not sure that it is showing social responsibility for all of us to turn away, in our work, from what we have done, as being too horrible to contemplate. The real hope is that our

maturity in knowing and dealing with each other can grow to match our maturity in knowing and dealing with the rest of our environment. This hope is a forlorn one if we try to force the match by burying nuclear tests, or by forgetting or even failing to explore some areas of our knowledge. We will not become more mature that way.

We have to build institutions strong enough to withstand all the pressures for war which exist now and which will become worse if we allow ourselves to forget the fireballs and what they can do. Such institutions do not come about easily. They may not come without war. They will not come at all, or, if they come, they will not last, if we simply destroy our current worst weapons and hope for the best.

Under these circumstances, in what way does it help for physicists to quit working on the physics of nuclear armaments? Surely we are not so conceited as to believe that our well-intentioned admonitions will succeed where the awesome results of our work would fail.

These are questions which I have not been able to answer and concerning which Bertrand Russell's advice would be most welcome.

MICHAEL M. MAY

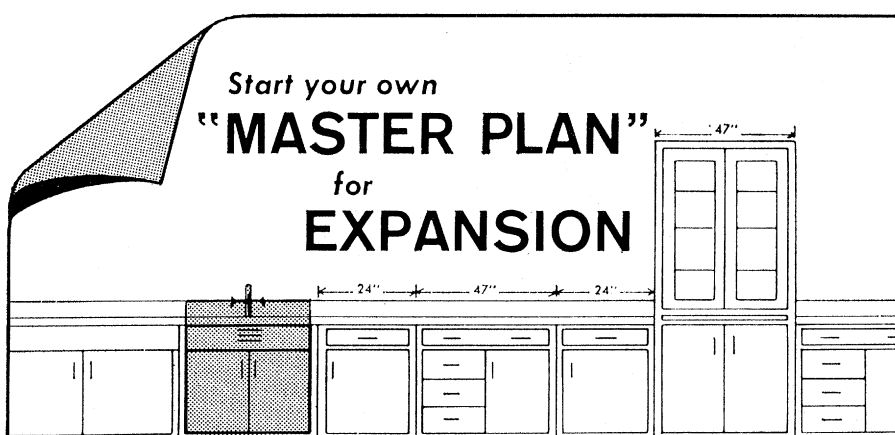
*E. H. Plesset Associates, Inc.,
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Bertrand Russell's article will be long remembered as a classic of rationalization. Russell states that scientists must concern themselves with the uses that society makes of scientific discoveries. In the case of "pure" science, that is manifestly impossible. We have been teaching scientists that it is impossible to foresee the future applications of their pure research and unwise to concern themselves with them. Now, says Russell, we should condemn Rutherford for his investigations of the structure of matter and Einstein for his equation on the relation between energy and matter because they have led to the atomic bomb. Should we not criticize Russell himself for his mathematical writings, which may have contributed something to the calculations that led to atom bombs?

Russell advises scientists to support fields of research the practical uses of which are beneficial. There are no such fields. All forms of scientific knowledge can be used for beneficial or nonbeneficial purposes according to the user's wish. Pasteur's work on fermentation might seem beneficial to some because it led to pasteurization, but to others it might seem nonbeneficial because it led to increased alcohol production and possibly to increased alcoholism.

DONALD L. MCRAE

*Department of Neurology
and Neurosurgery,
McGill University, Montreal, Canada*



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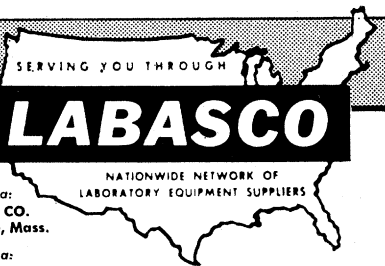
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