According to my line of reasoning, this gave the universities more and more to do in the way of government research but at the same time it reduced the number of hours available to the staff for teaching purposes and, since this research was done at an unrealistically low cost, caused the colleges and universities to become financially hard pressed. Consequently, tuition costs have risen drastically over the past 10 to 15 years, and a plea for funds has gone out not only to the college alumni but also to the country at large and to the federal government. On the basis of what I know of the cost of doing research in an industrial organization, I have a feeling that even the 28- or 32-percent burden for indirect costs given in the National Science Foundation study is also far too low. On the other side of the coin, however, is the possibility that fixing the indirect costs of research grants at 15 percent may cause the colleges and universities to become realistic, withdraw from this type of research activity, and return their full professors to the undergraduate classrooms.

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Ethical Issues

May I comment briefly on Haybittle's thoughtful remarks [*Science* **136**, 917 (1962)] concerning my recent letter "Standards of ethical conduct" [*ibid.* **135**, 997 (1962)].

I could not agree more with his statement that "the problem of introducing ethical judgments into the practice of science is by no means simple." But it does not follow, I believe, that this problem should be left entirely to the conscience of the individual scientist. In particular, this would amount to giving a blank check to the unscrupulous. There are other professions, scientific and otherwise, where ethical problems arise, and where Haybittle's remark applies—for instance, medicine, or the practice of law. In those fields, professional associations have long had committees on ethics, of the highest standing, whose task it is to define standards of professional ethics and, when necessary, to pass judgment on their peers. This has powerfully contributed to a continuing awareness, on the part of the members of the professions concerned, that ethical issues are

an inescapable part of their total professional responsibility.

The gist of my letter simply was that it is high time the professional associations in the exact sciences did the same and shed their present tacit assumption that ethical issues are no legitimate concern of, say, a professional association of physicists. The ethical problems they will meet, to be sure, are of the highest complexity. This precisely is an important reason why these should be tackled in the most responsible manner, and at the highest possible level of competence.

Not *all* the issues involved are complex, however. In particular, I believe that they are rather simple in the case of the Russian scientists who conducted the recent tests. The Russian government had assumed a clear international obligation to refrain from further testing. Those scientists therefore made themselves knowing accomplices in a breach of international faith.

Would it really be too much to expect the international scientific community to adopt some such stipulation as this one as part of a code of professional ethics: "A scientist may not knowingly help in a violation, by his own or any other government, of international law or internationally assumed obligations"?

What a rejection of some such principle would mean can best be seen in a hypothetical example: Assume that General Salan had seized power in France and had decided to use atomic bombs for destroying the Algerian Moslem population entirely (instances of attempted genocide are no novelty in the modern world). Should there really be no professional obligation—beyond the call of individual conscience—upon French physicists to reject collaboration in such a project?

This example points to one other important aspect of a code of professional ethics: it is apt to provide powerful professional backing to a scientist bent on resisting immoral claims upon his knowledge. Let us assume that one of the great Russian physicists had wished to resist Khrushchev; would he not have been in a better position to do so if he could have pointed to the discredit his collaboration would bring to himself and to the whole of Russian science than if he had had to be content with opposing his personal ethical judgments to the judgments of the government of his own country?

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