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Pooling What with Whom?

The decision that the North Atlantic Council meeting in Paris on 16, 17, and 18 December should be held at the level of heads of government grew out of the October meeting in this country between President Eisenhower and Prime Minister Macmillan of Great Britain, which, in turn, found one of its causes in the Soviet launching of sputnik I. As a reaffirmation of solidarity among free nations, and as an attempt to meet our own and our allies' immediate defense needs, the top-level meeting is welcome. As an answer to the scientific aspects of the Soviet challenge, the portion of the conference to be devoted to what the earlier U.S.-British meeting called "an enlarged Atlantic effort in scientific research and development" may offer some partial measures, but those measures face hard problems.

Any effort to share secrets in military research and development with other countries must first meet difficulties arising from our own laws and traditions. In the matter of atomic weapons, the Atomic Energy Law of 1954 permits us to supply our allies with information about such items as size and yield, but not with information about design and construction. In the matter of missile development, although no comparable law is on the books, we should not expect that our Defense Department or our industrial companies are in any rush to give away important military secrets. In time, of course, laws may be amended and traditions changed. The President already has said that he will ask Congress to amend the Atomic Energy Law. However, even if these initial difficulties are met, a more fundamental source of difficulties exists on the other side of the Atlantic.

NATO has several objectives: one is the political objective of promoting the unity of the member nations; a second is the objective we are here considering of advancing science and weaponry. The more fundamental difficulties lie in the possibility that these two objectives may work at cross purposes. If we are to disclose defense secrets to another nation, then, to compensate for the increased security risk, we can expect to learn something of comparable importance. Unfortunately, not all nations are equal in capacity. The advantages of trading with, say, England, are not the same as those of trading with, say, Turkey. Since some nations have more to tell us than others, exchange cannot simply be a matter of share and share alike. Consequently, if cooperation is to go beyond mere talk, we can expect that somebody's feelings will get hurt, to the detriment of NATO's political goals.

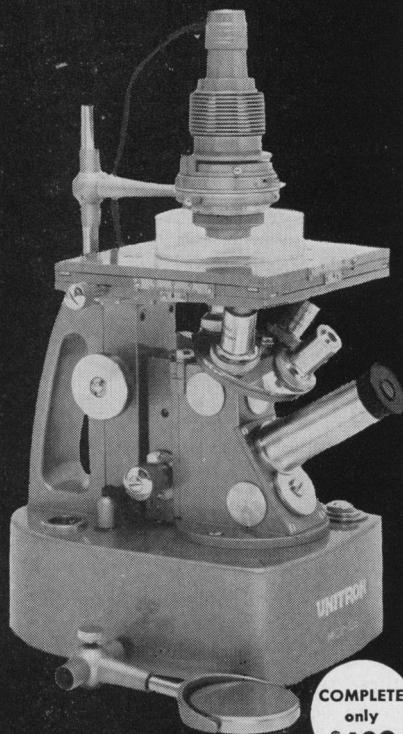
When we consider the matter of sharing, not just what we already know, but the responsibility for future tasks, a third source of difficulties arises. Not only is there the question of our laws and traditions, not only the possibility of hurt feelings, but also the question of the degree of trust that any nation can have in another's capabilities. To share responsibilities for future tasks is to divide them. Are we prepared to trust the development of items crucial to our defense to another nation, no matter how advanced that nation is? Or will such trust, in practice, be limited merely to matters of secondary importance?

Besides exchange in military research and development, the "enlarged

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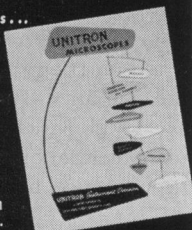
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Atlantic effort," apparently, is meant to include pure science—that is, scientific investigations that have no objective other than increasing the fund of general knowledge. This aspect of exchange faces no hard problems, but it does pose something of a puzzle. Since new findings ordinarily are published in scientific journals, and since scientists in all countries, including the Soviet Union, ordinarily have access to these journals, what is to be NATO's special contribution? Perhaps communication among countries can be improved, perhaps more scientific papers should be translated, perhaps some duplication of effort can be avoided, but the primary need in pooling results in pure research is more results to pool.

Difficulties exist to be overcome, and whatever success in pooling past results and future tasks the NATO conference achieves will be that much to the good. But, in pursuing togetherness with other nations, we should not lose sight of another, and perhaps more important, pooling problem, one that is closer to home. The largest buyer of military research and development is the U.S. Department of Defense. As the Department is now organized, it is possible for the Army, the Navy, and the Air Force, each, in seeking its own advantage, to work against the advantage of the country as a whole. A second point, less often stressed, is that the intense competition among the various industrial companies carrying out defense projects may likewise work against the larger interests of the country. To answer the scientific aspects of the Soviet threat, what we must also find are more effective ways to pool our own research and development efforts.—J. T.

For Adults Only

If, as almost everyone who considers the question agrees, improvement in scientific education and strengthening of the support of basic research are desirable goals in this country, then all avenues leading to this goal should be explored. Any lasting improvements must be based upon an increase in public understanding of what science is about and why basic research, which promises no immediate practical results, is the lifeblood of scientific advance.

The public is probably better informed about science and more alert to its needs than at any time in the past: press reports of science are, if not ideal, much better than they were a few years ago; Congressional hearings about science receive wide publicity; and books about science are abundant and on the whole good, although some fail to convey the spirit behind basic research. Among recent books that do convey this spirit we should mention Alan T. Waterman's *Basic Research—A National Resource* [*Science* 126, 835 (25 October 1957)], which considers in a highly readable style the justification for the support of basic research.

But there is another approach to public understanding that has received almost no attention. This is the approach through adult education. Although millions of adults take academic courses, few have an opportunity to learn anything about science except incidentally in technical and vocational courses. An adult student will find available courses in general academic subjects, the fine arts, agriculture, arts and crafts, homemaking, and recreational skills, to mention only a few, but typically no courses about developments in science.

The Scarsdale, New York, public school system is an exception: this fall, in addition to the usual subjects, its Adult School offered a course of ten lectures under the title, "Science and the Citizen." Warren Weaver's opening lecture in the course appears in this issue of *Science*. Lectures by other distinguished scientists dealt with the relations of science to health, security, food supply, industry, the atom, the nuclear future, the cell, radiation, and the stars.

Perhaps the Scarsdale experiment will point the way for scientists in other communities to contribute directly to a better understanding of what science means to our society.—G. DuS.

Science

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J. T.

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