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COVER: This supercooled detector designed by Louisiana State University and Stanford physicists is among the new devices being placed into operation to try to confirm the discovery of gravitational radiation. The next three or four years of the search may be decisive. See p. 30. (Drawing: NASA/MTF, courtesy W. O. Hamilton)

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Science and cultural unity

Like art and music, science bridges national boundaries. Whenever any artificial barriers to the natural international scope of scientific thought are removed, mankind as a whole should be richer. It is still far too early for a full appraisal of the expected effect of the agreements for cooperation in science and technology, space, health, and environment signed by the United States and the Soviet Union in May. But the uncertainty is mainly one of degree: No one can tell *how much* progress toward the solution of important scientific and technological problems might be advanced by cooperative programs; no one can tell *how much* international political relations might be improved by better international scientific relations. But it is certain that there will be some movement in a positive direction in both these areas.

There has been some amused reaction in Western European capitals at the fanfare accorded the cooperative agreements in the United States, noting that countries such as France and institutions such as CERN have been involved in cooperative research programs with the Soviets for some time. We should grant them that justified sense of self-righteousness. The heritage of cold-war antagonism between the United States and the Soviet Union has admittedly been slow to overcome.

Several points should not be lost from sight. One is that there has for years been a considerable flow of visiting scientists between the United States and the Soviet Union. It is possible on occasion to hear one American scientist telling another, "I'll see you this summer in Moscow" with the same casualness that two departmental colleagues might use in referring to seeing each other at an afternoon seminar. Soviet physicists have worked at the new National Accelerator Laboratory in Illinois and Soviet geophysicists have joined scientists of many other nations in working with Americans aboard the deep-sea drilling ship Glomar Challenger, to name just two examples. This is part of that international heritage of science. But the exchange programs have not always gone smoothly, and the establishment of the U.S.-U.S.S.R. Joint Commission on Scientific and Technical Cooperation, being discussed this week in Moscow by President Nixon's science adviser, should go a long way toward ironing out the wrinkles—if it is allowed freedom from undue bureaucratic impediments, as is envisioned. As much as a doubling of the number of scientists exchanged between the two countries is anticipated.

Another point to remember is that the agreements involve not just the usual exchange of scientific personnel but also actual joint development and implementation of programs and projects in basic and applied sciences.

As Presidential science adviser Edward E. David Jr. has noted, this is a step beyond previous agreements. It will involve a certain amount of high-level, binational scientific decision-making, and that process alone, regardless of what research benefits might result from it, should have some healthy effects.

Of course, by far the most dramatic part of the four agreements is the one deciding upon a joint manned space mission in 1975. The other agreements will probably have more effect on the scientific communities, but the sight of astronauts and cosmonauts entering each others' joined spacecraft high in earth orbit will undoubtedly have a greater impact on public attitudes and world opinion.

The mission's intangible benefits for the future of peaceful relations between the two countries and for the future of multinational space-exploration will far overshadow its intrinsic value, which is minor at best. The spacecraft pilots and mission-control teams will train in each others' countries, learn each others' languages, solve mutual problems. These activities and then the space flight itself will help prepare the world for the emergence of the space age from its nationalistic childhood. Despite the many pressing problems on earth, it undoubtedly is part of human destiny to explore the solar system beyond the moon. When that time comes, there will be no room for petty national jealousies and the squandering of one nation's resources to outdo another. The first manned mission to Mars, for example, should be a result of a pooling of the economic, technical and human resources of the United States, the Soviet Union and as many other nations as can usefully contribute. The exploration of the planets, like all of science, should truly be on behalf of all mankind.

Kendrick Frazier