Technical Cooperation: Big Boost from De Gaulle's Resignation

London. A lot of big plans in Europe for research and technologically advanced industry suddenly look much brighter as a consequence of General de Gaulle's departure from power.

The reasons are twofold. First, the French veto of Common Market membership for Britain, coupled with De Gaulle's pursuit of national grandeur, has tended to sour efforts to build the sort of continental political framework that is now so clearly seen to be a prerequisite for working effectively in many major fields. And, second, since science, technology, and big industry lend themselves to cooperation across borders, the secretariats for such efforts have long been in existence, thinking hard about what might be, and waiting for the political atmosphere to improve so that permission and money will be forthcoming. Britain's entry into the European Economic Community (EEC) —which now seems assured, though the timing is uncertain—would mainly bring a psychological change to bear on technical matters, since there is nothing at present to prevent her from joining in projects with the Community as a whole or with individual members; in fact, she has done so in several ventures. However, with the Community far from being a viable organization and with Britain occupying the position of an outsider, the impulse toward pooling of efforts has generally run against the current rather than with it.

The quest for national advantage, so marked, for example, in European stabs at cooperation in atomic energy, is not very different in motivation from the quest for regional advantage that characterizes American atomic-energy politics. But, with France having imposed a unanimity requirement on decision-making in the Community, there is at present no structural support for emphasizing cooperation as against national advantage. Any change is likely to be evolutionary, and accompanied by many difficulties. And it will probably be some time before a sense of community, backed by the necessary political agreements, comes into being. But with the growing dominance of American science and technology providing a constant nudge, and with the difficulties that flow from fragmentation there for all to see, the pressure to build and develop the political mechanisms that will improve Europe's competitive position has constantly risen. Plain greed is no small element in all this. Relative to most of the world, Europe is rich and comfortable, but, on a per capita basis, she is only about half as rich as the United States, and it is westward that she looks in drawing comparisons.

There is no shortage of plans for pooling efforts. In fact, a sort of "cargo-cult" situation has been flourishing, with great hope arising from the belief that, if well-staffed offices for cooperation are in being, cooperation must surely be on the way. But over the long haul it has been realized that political harmony comes first, and that then all sorts of things inevitably follow. And now, with France apparently bound to pursue more European policies, the prospects for such harmony are greatly enhanced. Within a Common Market expanded in size and power, the most easily implemented activities would be those in the industrial field, where the impulse for cooperation would benefit greatly from common policies on patents, freedom of movement for employees, and, perhaps most of all, the presence of Britain as a cooperating rather than a competing force. Though Britain, with its sickly balance of payments, has a tendency toward self-deprecation, her skill in many fields, such as aircraft design, computers, and atomic energy, looks quite good across the Channel, and Europeans frequently make the point that an infusion of British cooperation could have a yeasty effect on the whole European technological scene, with benefits for Britain, too. Already, in fact, there is a move under way to pull together the struggling computer industries of Germany, France, Italy, and the Netherlands into a combine with Britain's International Computers, Ltd., which is acknowledged to be the most thriving of the lot. The target, of course, is IBM's command of over two-thirds of the world market, and the intention at this early stage is to design machines that would be competitive in the 1980's. The move has the endorsement of the Common Market and, though well in the works before General de Gaulle's abrupt resignation, now looks much more promising. Similarly, there is talk now of expanding membership in the British-German-Dutch scheme for constructing two centrifuge plants for uranium enrichment. The project arose, in large part, from France's negative attitudes toward Euratom, and these attitudes, in turn, flowed from France's desire to emphasize its military nuclear program at the expense of nuclear-power projects. But if a change of government produces a reorientation in French technological policy-making, which is considered likely as the price of De Gaulle's priorities becomes more apparent, there may be new hope for Euratom, and, in one way or another, it may come into the enrichment scheme.

Little noted, but potentially of great significance, is the so-called Maréchal Plan, named after André Maréchal, former head of the French Delegation for Scientific and Technical Research, the equivalent of the White House Office of Science and Technology. Several years ago, while foundering in one of its recurrent budgetary crises, Euratom took the natural course of looking beyond the atomic field for activities that might assure its continued existence. Accordingly, it commissioned a group headed by Maréchal to seek out new areas for European scientific and technological cooperation. For a time, work was stalled when the Dutch declined to go along unless France dropped its opposition to the possibility of British participation. But the French eventually yielded, and the committee produced recommendations for programs in data processing, telecommunications, transportation, oceanography, metallurgy, pollution control, and meteorology. These recommendations are now working their way through the various levels of the EEC, and no doubt are a long way from implementation. But, again, the newly revived hopes for an effective Common Market put them in the category of realistic possibilities rather than mere staff exercises.

One major impediment to Europe's coming together, or working well if it does, is the fact that few, if any, of its individual governments have a

strong hold on power. Polls and by-elections indicate that Britain's Labor Government would be obliterated if an election were held now; France remains a question mark until a new government is installed and indicates the line it will follow; Italy moves from crisis to crisis, amid strikes and demonstrations that halt the little that its antiquated bureaucracy is able to achieve; and Belgium is wracked by the increasingly bitter Flemish-Walloon conflict. Germany stands out as the most powerful and stable of them all, and so far has been undeviating in dedication to European union, but German leadership in almost anything is not altogether relished by her European neighbors.

Another impediment to grand-scale European technological cooperation, though only a potential one at present, is the student movement. Though battered down or mollified with concessions here and there, it seems destined to become more powerful and influential, not only because of real grievance but also because of student admiration and envy for the havoc its counterparts are now routinely wreaking throughout the United States. And the students, though they have yet to concern themselves with such high-level matters as multinational cooperation in big technology, are inevitably bound to discover that the designs of Europe's technocrats do not necessarily mesh well with their own visions of an agreeable society. Big technology requires that universities serve as training centers for the needs of big technology, and that isn't what the students are talking about when they rebel against the procedures and values that prevail in European higher education. In Britain, so far the least inflammable of academic scenes (the London School of Economics has been in a state of upheaval for months now, but otherwise the universities are relatively calm), there is a competition between grudging reform and attempts to ignite revolt. But the latter effort seems to be gaining headway, and central to much of its success is the feeling that the universities are serving as instruments of a society that is more interested in profits and efficiency than in human values.

Just how these concerns might affect the impulse toward European cooperation in research and industry is not clear. But they are infectious concerns, and it is doubtful that they will remain confined to the campus over the long run.—D. S. GREENBERG

A. D. Sakharov: Soviet Physicist Believed To Have Been Punished

There is growing conviction that Soviet authorities have taken administrative measures to punish the noted physicist Andrei D. Sakharov. According to knowledgeable observers of Soviet affairs in Washington, Sakharov was summoned for verbal criticism last year after his outspoken essay "Progress, Coexistence, and Intellectual Freedom" was published in the New York *Times* on 22 July. Actual disciplining, however, is thought to have been performed during the early months of 1969.

Fragmentary accounts of Sakharov's punishment have appeared in scattered Western publications. One of the earliest accounts appeared in *Posev*, an emigré Russian-language journal published in West Germany which has a reputation for accuracy in reporting the details of the recent crackdown on Soviet intellectuals. *Posev* said that Sakharov had been deprived of work as a consultant in one of the ministries, had been removed from his position as chief consultant at the State Committee for Atomic Energy, and had been removed from his work in the restricted physics institute at Chernogolovka.

Another report by an English journalist printed elsewhere indicated that Sakharov had been barred from the research institute at Dubna and had been expelled from the Soviet Academy of Sciences. But other observers who agree that Sakharov was punished do not believe that he has been expelled from the Academy. They point out that such an expulsion would create wide reverberations inside the Soviet Union, and also that the Academy, especially the physics section, has been relatively immune from such political pressure. One observer has concluded that Sakharov may have been sent to work in a Soviet science installation in Siberia, but this conclusion seems speculative.

When asked by *Science* about these reports on Sakharov, the Soviet Embassy in Washington refused to confirm or deny them, saying only that it had no information on this matter. The Soviet Embassy refused to be of any further assistance on the subject.

If punishments have been meted out to Sakharov, such reports have not spread widely among those U.S. scientists who have the most contact with the Soviet Union. The Foreign Secretary's office of the National Academy of Sciences is not aware of any actions taken against Sakharov. American scientists requested that Sakharov be included among the Soviet scientists to attend the "Pugwash" conference, which will be held in the Soviet Union at Sochi in October. The list of Soviet scientists who will be attending the Sochi meeting was sent recently to the United States and does not include Sakharov's name. This omission is not surprising, however, since it would be unusual for the Soviet government to permit a man who has been so critical of the regime to attend an international gathering of this sort. Apparently the last time any American scientist is reported to have seen Sakharov was at a conference on gravitation held at Tbilisi in the Soviet republic of Georgia in early September. (This was several months before Sakharov is said to have been punished for his outspoken criticisms.)

If Sakharov has indeed been punished, the confidence of many Western observers about his immunity from official retaliation would have proved ill founded. After Sakharov's essay was published, some Western scientists and other students of the Soviet Union said he could get away with such criticism because his scientific reputation and worth to the state rendered him "invulnerable." Some observers have said that Sakharov is regarded as a "saint" among Soviet scientitsts.

Sakharov, who played a crucial role in the development of the Soviet hydrogen bomb, certainly has an immense reputation in the Soviet Union. Harrison E. Salisbury of the New York *Times*, one of the leading writers on Soviet affairs, has commented that Sakharov is "a kind of Oppenheimer, Teller, and Hans Bethe all rolled into one. He speaks with a voice at least equal to the sum of all three and, perhaps, even more powerfully, since his