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LETTER FROM GENEVA

A plethora of 45 Bev problems

Competition over the site of a 45 Bev accelerator muddies discussion of the still-pending CERN 300

The tenuous accords by which CERN, the European nuclear energy organization, is struggling to assemble a 300-Bev particle accelerator are plagued by an excess of interest in high energy physics.

The devotion of European nations to internationalization of science, which is supposed to be its answer to the technology gaps (SN: 3/30 p. 302), does not extend, apparently, to international cooperation in somebody else's back yard.

The hang up, it seems, is not the 300 Bev itself, though only France, Austria and Belgium of the 13 CERN nations have pledged support. It is the 40- or 45-Bev satellite accelerator, which most Europeans agree is a necessary adjunct.

Quick to approve the continental 300, France instructed its delegate, Prof. Francis Perrin, to plump for a 45 for Saclay, France.

This broke the spirit of an informal agreement with Germany. The Germans thought that, since they had supported the French on other international projects, the French would support a regional 45 atomic racetrack on German soil.

Most German scientists are acknowledged devotees of European big science, although they have their national interests as well.

Germany pays 23 percent of the CERN budget—larger than France's 19 percent and Britain's 22 percent—and the projected figures for the 300-Bev machine are impressive: by 1975, according to German estimates, they will pay 80 million marks a year for CERN and another 75 million to 78 million for the 300, possibly 27 percent. A mark is worth \$.25.

German physicists promise that a 45-Bev machine on their territory would be truly a regional resource, valuable for the training of young Europeans unable to get time on the 300.

Britain and Switzerland have other supplementary installations that they have offered to the region to help compose Europe's grand physics design.

But the crucial issue, it appears from Geneva, is whether Germany or France gets the 45-Bev machine.

"German science is making every possible effort to create a 45 without jeopardizing the 300," says a leading German scientist.

"Two more big (45) machines in Europe, however, would be too many."

German scientists at the last CERN meeting reopened the question of CERN-U.S. cooperation. Could it be improved, they asked, on a large scale, "without sending all our scientists to the U.S.?"

U.S.-European cooperation on the next generations of accelerators has been explored since a meeting in Vienna in July 1964, when the Europeans openly favored intercontinental cooperation in physics and invited the U.S. to take them up.

The idea did not take, and since then, the issue has been left at that—friendly intercontinental competition, purportedly essential to the march of world science.

Many Europeans feel that, as one said, "at the moment when European physics is reaching the U.S. level, we shouldn't give up our own continental effort."

Soviet physicists have also considered international cooperation on the big machine. In their view, however, such a move would have to take place at the next level—1,000 billion electron volts.

Since no one is seriously planning such a monster, long study and thought would be needed to even decide if a 1,000-Bev accelerator would be worth building. The chairman of the CERN scientific policy committee, Giampietro Puppi, points out, "We have no reason to believe that there is anything magical about any of the very high energies."

CERN has reached one unusual agreement with the U.S.S.R. The European cooperative will furnish equipment for beam extraction and purification to the largest Russian machine, the 76 Bev at Serpukhov.

The equipment will become Russian property; the Russians on their side offer to mount experiments for CERN workers, and allow them the use of the facility.

David Alan Ehrlich