

editorial

Batavia in perspective

In 1968 Batavia director Robert R. Wilson agreed to take on what many thought an impossible task—to build a 200-GeV accelerator for only \$250 million (the maximum investment the government was willing to provide for this kind of project) and build it on a timetable that called for experimentally useable beam in 1972. In 1970 NAL announced that it intended to advance this date by a full year to 1971. However, unforeseen problems ruined these hopes and the beam actually became available in 1972 as originally scheduled.

It was recently reported (*Science*, 14 December, page 1117) that rumblings of criticism and discontent can be heard issuing from the army of experimentalists now camped on the plains of Batavia. The big machine, it was said, is not working well and may never realize its promised performance. It was further commented that, whereas the philosophy followed by NAL “included cutting corners whenever possible” to get the accelerator “built quickly and within a stringent budget . . . some physicists now question whether a more conservative approach such as that being followed in the construction of the new accelerator at CERN would really have required any more time or money.”

True, we do not know yet whether the accelerator will achieve every single hope and ambition of its designers; and experimentalists whose programs had been approved to go on the machine in 1971 have understandably been disappointed and frustrated by the delay of a year in beam and the further delays experienced by some because of problems with secondary beams. Other points of complaint are that the accelerator beam has not yet reached its design intensity, and various bugs still require correction and cause the machine to be down roughly one third of the time.

However, large accelerators often require a lengthy start-up period in which the operators work at adjusting the system to yield peak intensity and methodically eliminate obstacles to reliable operation. And Batavia has made significant progress during the last several months on the problems noted.

(For instance, during 1973 the beam intensity was tripled.)

Rather than indulge in hindsight carping, it is useful to consider Batavia in broad perspective. There can be no doubt that the NAL facility has already in many ways turned out to provide much more than originally thought feasible and will give the US a giant-step lead in ultra-high-energy physics. The actual machine has proved capable of 400 GeV or more in contrast to the original design value of 200 GeV, and critics neglect to mention that the space provided for experimental groups is about twice that initially planned. The present beam intensity of 5×10^{12} protons/pulse is already in proximity to the maximum intensity the designers of the CERN machine hope to achieve (10^{13} protons/pulse). At this beam level and even with the substantial down time, 60 experiments so far have been completed or are now under way with as many as 12 experimental groups sharing the beam at the same time. Experimentalists were able to begin using NAL a mere four years after the start of construction and the machine will have been in operation producing valuable results for a total of four years before CERN gets its first beam in 1976. Through a miraculous effort of the NAL staff, all of this was accomplished within the original budget of \$250 million in spite of ham-stringing delays in the flow of funds.

US physicists can take considerable pride in this achievement, just as we did in the construction of the country's other new major high-energy facility—the Stanford Linear Accelerator—which also was built on a tight timetable and within the original budget.

We recommend that would-be critics pause to consider NAL in its true perspective and resolve to help in doing everything they can to make sure that the progress of physics derives maximum benefit from this magnificent facility.

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