

From New Delhi by Susan Maitra

A science crisis

India's R&D establishment, a bureaucratized confederation of baronies, is under pressure to perform.

The failure of the ASLV rocket, the latest in India's series of increasingly powerful rockets that was intended to launch a satellite into geostationary orbit, grabbed headlines here on March 23. But as Prime Minister Rajiv Gandhi rightly said at the time, the failure is not a setback for Indian science, but a learning experience.

The real crisis in Indian science—its bureaucratization, mediocrity, and lack of connection to the social and economic fabric of the country—is deeper and more difficult to solve. India's Space Research Organization (ISRO) is more a part of the solution than of the problem. This deeper problem in Indian R&D has been receiving intermittent attention over the past two years, as the Rajiv government turned over one stone after another in the science establishment. Most recently, a stir was provoked in March when a specially appointed review committee, led by Planning Commission member Abid Hussain, submitted its recommendations for overhaul of the Council of Scientific and Industrial Research (CSIR).

CSIR is a network of 39 research laboratories throughout the country, originally established by Jawaharlal Nehru and Shanti Swarup Bhatnagar, the institution's first head. Together with the Indian Institute for Technology and the Department of Atomic Energy, set up at the same time, CSIR was the core of independent India's fledgling R&D capability, and one of the building blocks in Nehru's farsighted program to institutionalize advanced science and technology.

Nearly 40 years later, CSIR has yet to realize its promise. Instead of a dynamic force moving and shaping the economy and society, CSIR has become a stodgy monolith, a kind of bureaucratized confederation of baronies, in which diverse types of R&D go on, of widely varying quality and usefulness. As the Abid Hussain committee emphasized, this was by no means all CSIR's fault. Indian industry (historically dominated by a petty traders' mentality) is notoriously allergic to R&D, and CSIR's potential has been partially aborted on that account. Government policies never addressed this obvious problem.

Though the Hussain committee's report has not yet been made public, the gist of its contents have been leaked to the press. The committee recommended reorganization of the CSIR, including transfer of some labs and an overhaul of the administrative system, to introduce coherence, directionality, and accountability into the institution's functioning. Induction of outsiders into CSIR's management and the separation of administrative and R&D directive functions, are two specific measures suggested. A proposal that CSIR's budget be linked to earnings from external contract work, envisioned at 30% of the budget, has provoked much controversy.

It was recommended that CSIR's research program be divided into three categories: mission-oriented programs, under the direction of CSIR management; research for corporations or other bodies outside CSIR; and exploratory research investiga-

tion. The committee recommended that CSIR develop its own list of 10-15 "technology missions" to be taken up over the next 15 years, with two or three identified for completion in the next several years.

This would be complemented by programs to master certain advanced technologies where progress is rapid, such as microelectronics, instrumentation, genetic engineering, and so forth, for assessment, absorption, and ultimate development of these technologies indigenously.

Though the government has as yet taken no action on the Hussain committee report, the predictable outcry has already been raised from the scientist-administrators whose baronial prerogatives are now under question. It is not the first time the science establishment has had its cage rattled.

One year ago, Rajiv Gandhi summarily abolished the Science Advisory Committee to the Cabinet (SACC), the hub of the country's "science mafia," and replaced it with an eight-man committee of working scientists and technologists. Their job: to advise the prime minister on major issues of science and technology, and to draw up a plan for the 21st century.

As Rajiv Gandhi stated in Bangalore recently, when he inaugurated a new defense research facility, one of India's greatest failures has been in translating science into technology. He has sought to introduce a "mission approach"—borrowing from ISRO's example—into India's overwhelmingly government-run science and technology activities, raising its standards and accountability.

It was, among other things, the old SACC's inability to produce a coherent program of science and technology missions, despite months of prodding, which forced the prime minister to conclude that radical measures were necessary.