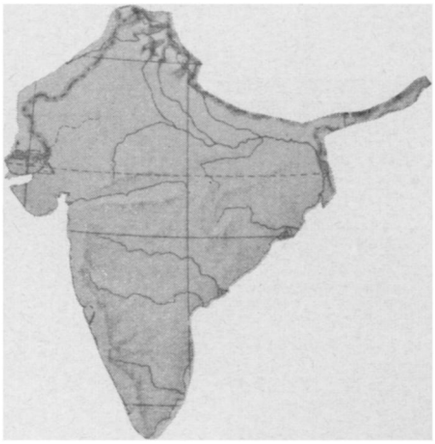
LETTER FROM BOMBAY



# Growth and discontent

## The national science agency shows signs of success, but it is also unwieldy

by S. K. Ghaswala

India's Council of Scientific and Industrial Research, celebrating its 25th anniversary, can boast of substantial growth and considerable achievement. But an undercurrent of discontent, stemming from the organization's size and unwieldiness, can be also heard.

Beginning a quarter century ago with a modest dozen rooms in the Delhi University campus and a budget of just $90,000, CSIR has today grown into a sprawling complex, with 32 national laboratories, a number of regional labs and annual expenditures of $25 million.

It originally started with the limited objective of attending to the urgent demands of World War II. Now CSIR embraces scientific research in all fields. In its diversity of approach and in its total laboratory strength, it forms one of the world's largest scientific organizations.

Specialized fields range from aeronautics, roads and buildings, glass and ceramics, mechanical engineering and metallurgy, to oceanography, scientific documentation, electronics, leather technology, fuel research, food and drug technology and marine engineering. Various labs have also set up field stations for survey and evaluation of industrial raw materials and for undertaking extension and industrial liaison work.

Through its 13 research committees, CSIR supports research in universities by grants-in-aid. It has also helped to set up 11 industrial research associations for work on complex problems faced by a variety of industries. In the same vein the council has established the Indian National Documentation Center and two scientific and technological museums.

Among its accomplishments, CSIR counts methods for improving inferior coals as well as a process for making formed coke—two advances that have laid the foundations for a significant expansion of the country's iron and steel industry. The manufacture of optical glass on a pilot plant scale, now expanded to meet the total demands of the country, is another significant achievement. The production of infant food from buffalo milk has led to the establishment of a thriving industry and enabled India to eliminate imports of baby food.

Among other important works initiated by CSIR labs are evolution of substitutes for various items such as mica and ceramic capacitors, ferrites, processes for producing chrome and tungsten iron alloys, vegetable oil blends as lubricants, antimalarial drugs, and the use of flyash in construction. To date over 11,000 research papers have emanated from CSIR scientists, about 1,800 research projects have been sponsored in universities and other establishments, about 1,500 patents have been taken out and some 340 processes developed and used by industry.

In spite of all these activities, the CSIR has come in for criticism by industrialists and scientists alike. This has been further highlighted by the recent award of Nobel Prize to Dr. Har Gobind Khorana at the University of Wisconsin (SN: 10/26, p. 411). He had been unable to get a job when he was in his native India.

What is felt here is that real talent often fails to be appreciated and senior scientists continue to maintain their prestige and dislike making way for younger and brighter scientists.

The country spends $133 million a year on scientific education, research and allied activities. The registers of the Scientific and Technical Manpower Directorate contain 284,000 names, of which about 13,000 are at the moment abroad.

In spite of this investment in men, money and equipment, India is getting relatively poor results. Unemployment among qualified engineers has reached 40,000, design engineering and consulting services are very limited, and the output of CSIR labs—as significant as it is—is inconsistent with the outlay. The total value of products manufactured under processes developed in CSIR labs from 1948 through March 1967, when last figures are available, is only $20 million. "This figure is nothing to crow about," one CSIR official says.

It was for these reasons that the long standing Science Advisory Committee was eliminated and in its place a more powerful and vigorous Committee on Science and Technology was formed last year.

Even the CSIR, under its dynamic director general, Dr. Atma Ram, is being revamped and streamlined. A Parliamentary committee has been appointed to inquire into its working, and should give CSIR a shot in the arm by looking critically into the hierarchical structure and its system of motivating individual scientists. It should also bring outstanding science personalities to bear on a variety of basic problems confronting the country, including science budgeting, the brain-drain and liaison with industry. The next few years will be crucial for CSIR.