

## A Science policy for Tamil Nad\*

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Scientific administration in India is conducted today mainly through three channels :

1. The Department of Atomic Energy, Government of India
2. The University Grants Commission and
3. The Council of Scientific and Industrial Research

I had the privilege of being closely associated with my teacher Professor Bhabha who was responsible for the creation of the Department of Atomic Energy and was the first chairman of the Indian Atomic Energy Commission. I am well aware of the circumstances under which Sri S. S. Bhatnagar created the chain of national laboratories immediately after our country gained independence. I also closely followed the creation of the University Grants Commission and watched its role during my tenure as Professor at the Madras University and as a member of the U. G. C. expert committee on mathematical education.

While India has made good progress in the scientific field we have to concede that *our contribution in relation to international science has not been commensurate with the large amounts of money that have been expended during the past three decades.* During this period I have visited over a hundred institutions in the world where I had opportunities to lecture on my research work and met over five hundred scientists of established reputation in the domain of mathematical sciences. Therefore, instead of making a critical appraisal of the present situation in Indian science I would like to place my suggestions in a forthright manner regarding the tasks to be done particularly in Tamil Nad during the next ten years.

I am encouraged to assert, with the pardonable pride of a citizen of Madras, that *Tamil Nad has a fine chance of contributing effectively to the scientific, technological and educational development of our country.* Everything is in favour of its playing a pre-eminent role—a long and continuous tradition of learning and scholarship, the estimable contributions of its scientists, the significant achievements of its engineers and the high standards maintained by its schools, colleges and research

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institutions. What is needed is just *a co-ordination of effort, a sense of national pride and a new stimulus for creative science*. This has to be done at all levels—school, college, post-graduate, and post-doctoral.

### OUR SCHOOL EDUCATION

It is a curious fact that high school education in Tamil Nad not only compares favourably with that of highly developed countries but is in some respects ahead of international standards. This is because of the age-old Indian tradition of parents taking an active interest in the education of their children and the commendable devotion of teachers to their tasks. Our school teachers are doing splendid work though they are contending against very difficult conditions. The administration of any high school is under a 'secretary' or a 'correspondent' who may not have the requisite qualifications for being the trustee for the education of a rising generation of citizens. In many cases he is just tied by 'blood and favour' to the financial supporters of the Institute. It is desirable that the Government prescribes rules and procedures for the appointment of such 'secretaries'. The Government should also insist on the appointment of an advisory body for each high school, consisting of scientists and educationists who may meet once a year, examine the progress of the school and offer suggestions for improvement. The very existence of such an advisory body would ensure that many malpractices regarding the admission of students and recruitment of staff are avoided.

On the whole I am of opinion that the education in our schools is in a satisfactory state except for some curable ills.

### OUR COLLEGE EDUCATION

On the contrary our college education requires a total re-examination and needs almost revolutionary changes.

1. There should be an almost inflexible rule that any University class must be taught by teachers with adequate qualifications, i e. the Pre-university and B.Sc. by those with M. Sc. degrees and the M.Sc. classes by those with atleast Ph. D. Degrees.

2. The most regrettable feature of the present graduate education is *the woeful lack of exposure to modern scientific thought* through lectures of visiting professors and scientists. There seems to be an appalling apathy and unjustifiable reluctance to invite visiting professors though the financial commitments would be very small indeed. The real reason seems to be that the authorities are *unduly apprehensive of competition*. A good visiting scientists programme will provide the stimulus of competition which is the breath of scientific life. *A provision for twenty five lectures per year from outside scientists should be made in each department.* This would imply approximately only five thousand rupees per year per department for providing a modest honorarium and travel expenses for each invited speaker.



There should be an Academic Council for each college which should consist of senior representatives of the Academic staff and some scientists and scholars from outside the organisation.

### POST GRADUATE RESEARCH

There should not be the slightest compromise in the standards to be aimed at and maintained in scientific research. There can be no substitute for excellence. Inadequacy of facilities or shortcomings in administration cannot provide an excuse for the dull, weary, stale and unprofitable use of our valuable resources of manpower and intellectual potential. The blame essentially lies on the scientist who slides into complacent mediocrity, conveniently blaming external conditions for his inadequacies.

What is needed today is a suitable forum for expressing and assessing scientific ideas and this can be provided through conferences, seminars and symposia. The aim of every working scientist should be to get his work evaluated by experts in the field; their critical estimate should determine his status and his role in society.

One of the serious drawbacks in our scientific endeavour is the total lack of contact between industry and technology on the one hand and pure and fundamental science on the other. In the United States the mathematician, engineer, chemist, metallurgist, economist and administrator, have competed and collaborated to achieve the 'mission impossible' - man's journey to the moon. How is it that in spite of three decades of scientific effort, industrial development and frequent travel to foreign countries our scientists still stand isolated from problems of real life and national needs?

They avoid such a confrontation since we expect miracles from them and become disappointed if they do not fulfil our expectations. Science is a systematic application of the method of trial and error, adjustments and revisions, of innovations and rejections, under pressure of logic and necessity. Only such a realistic approach can lead to fruitful co-operation between science and industry.

Systematic and scientific investigations should be undertaken for *the conservation and proper utilisation of our national resources.*

It is a sad and melancholy fact of our academic life that our distinguished academicians are condemned to premature retirement. In a fitful fever for encouraging youth and talent we are cultivating an impious disregard for loyal service and long experience. Unlike a civil and administrative official, an academician acquires a permanent position only in his middle thirties and therefore it is appropriate that the age of retirement should be raised to *sixty-five*. The professorships at Oxford are tenable till sixty-seven while in the United States the generally accepted age of retirement is sixty five. Moreover emeritus professorships are awarded as recognition of loyal and meritorious service.



It is said that the test of a civilised society is the manner in which it honours its dead. We should atleast honour the living who have served us so well in the cause of education through long years of dedicated service. Is it not a great stimulus to youth if it can look forward to enlightened recognition of distinguished service and outstanding achievement?

### A SCIENCE FOUNDATION

In pursuance of these objectives, I place the following suggestions for the consideration of the Government of Tamil Nad :—

1. The immediate creation of a *Tamil Nad Science Foundation* the primary function of which is the allocation of funds for the advancement of science and technology. The foundation may be composed of senior representatives of Government, of educational Institutions and scientists of established reputation.

2. The formation of a *Tamil Nad Science Academy* whose duty is to advise the Foundation in regard to the allocation of funds, to estimate scientific work and award prizes and honours for significant achievement.

3. Establishment of media for publication of scientific research and dissemination of scientific knowledge to the citizen. This can be done through three classes of journals under the auspices of the science academy :

- 1) Advanced journals containing original contributions in research
- 2) Journals propagating science to the citizen
- 3) Journal for short communication for the rapid announcement and dissemination of results of research.

### A SPLENDID CHANCE

Looking at the Indian scene there seems to be no prospect of such a leadership from the existing sponsors of scientific research. Ten years ago Tamil Nad took the bold and imaginative step of creating an Institute of advanced learning like MATSCIENCE instead of yielding to doubt and hesitation or waiting for the tardy and reluctant support from external sources. Will Tamil Nad seize time by the forelock and take a leap into the future in this atomic age when interplanetary travel is becoming a part of our way of life?

A splendid chance awaits our happy State. We have good reasons to believe it will take it.