

STATUS OF SCIENCE IN INDIA

Comments: Dr. S.S.Kalbag, Vidyan Ashram, Pabal, Dist, Pune412403.

The major points of the case for more funds for science may be summed up as:

1. Basic science is important for long term future of the nation; support at least the frontier areas.
2. The budget for science in India is less than in other countries on GNP ratio basis and is now dropping. This needs to be increased.
3. The research costs in India are less than in countries – the wages of scientists are less.

All the above are true and valid. But there are some other points not considered by man scientists. There are certain other requirements, before science can benefit the nation; without these Science cannot deliver the goods. These are a skilled labour force; an industrial infrastructure, and a society that is at peace.

The support for science till now, came from the enlightened Nehru family, who had a unique combination of the best in the East and the West. That era is now over.

What will be the basis on which we should "sell" the need for more basic science? The society at large does not understand sciences it know and appreciates, technology. It therefore is proud of our rocket launching, the missiles, and the satellites. It will also take pride in Nobel prizes or other very prestigious awards.

Like a family in bad times, our country is -facing severe financial crisis. Like the members of a family, we have to sacrifice something so that the nation survives. Which activity should get the priority?

Poverty alleviation; literacy and primary education, water and food for the year 2000; or removal of social tensions, or basic science research?. It is a difficult decision for any government, particularly when non issues like the Ram- Masjid shake up the whole society, If the society is backward looking, we as citizens are also to blame; what have we done to spread the benefits of science to the rest?

If the disparity in the society is not checked, the social tensions increase and any thing could rouse passions and ignite. If an upheaval erupts, it will engulf all the scientists also.

I suggest the following as an approach for the science in India;

1. Science establishments should analyse their budget; and should bring noticeable austerity. I know scientists who gave up their own privileges to act facilities for the laboratories. They should not spend too much on buildings, gardens and auditoria bring to the minimum the cost of meetings and seminars. **Make authority a way of life.**
2. Frontier areas are created by scientists, by making a breakthrough in research, Pasteur served industry and founded a new science, Earlier, in India, Malaria, and cholera have proved excellent subjects for "frontline" work. **The basic science related to our problems should get more attention than "frontier areas" not of immediate relevance.** As Mashelkar has said in his article, in the same issue, why cant Engineering Science give India a frontline position in Railways, roads irrigation, water shed developments, metallurgy etc. This will bring immediate economic returns and bring more funds for science. This will give the society faith in science and prepare the ground for real basic research.
3. There should be a strategy for getting a long term foothold in basic science. This may include:

i. Enlarging the catchment area where young scientist are attracted. At present it is about 5% or less, of the total population. This should be increased to 50% by improving quality and amount of school science.

ii. Remove the deadwood in the science teaching and research institutions. Those who go for masters degree should "go through fire" to prove they love science. Higher education should not, be subsidised but prospective students, should be given opportunities to earn their fees and material costs, by working part or full time on the campus or in the laboratory. This will eliminate non scientific staff from the campus, and bring a better work culture and perhaps make the scientists more skilled generally in life.

iii. Instrumentation research, design, fabrication, repairs should get much wider and more intensive attention. This should be a "frontier area" for us. I believe instrumentation is one of the major cost centres in today's basic research. We should follow Raman and JC Bose in this. Pioneers have necessarily, to design, and I build their own instruments.

4. In the same issue, in the biography of JBS Haldane, there is a mention of his suggesting research in animal behaviour because it will cost less. I feel this is a good strategy. Should not, the topics for research for universities be selected such that the research approach is taught without too high an expenditure. It may also teach the students how to measure when no ready instruments can be ordered. Such topics will encourage creativity, not only in research but also in instrumentation and techniques.

In this era of "no subsidy" the scientists will have to sell their case to the society to earn a bigger budget for science and not depend on a Nehru. For this, they will have to give up something; what will they give up to prove their love for science? Science should not be just a career, but a life mission. Those who are not committed to science will go, when there is less money in science and in the long run it may help Indian science to become slim and agile.