# Cardinal Virtues

RP - 11

## By Bal Phondke

SINCE last year, the twenty-eighth of February is being observed as the National Science Day. This year the observance assumed special significance as that particular day marked the sixtieth anniversary of the discovery of Raman effect, an event representing the high-water mark not only in Indian science but also in twentieth-century physics. Further, the birth contenary of Prof C. V. Raman is also being celebrated this year.

Indian science today is a far cry from that of Raman's times. It enjoys considerable government patronage. The exchequer allots large sums of money supporting the numerically strong manpower running several national laboratories overseen by a number of government departments. The choice of the anniversary date of the discovery of Raman effect to rededicate ourselves to this national scientific endeavour might appear anachronistic, because, as the sceptics always point out, albeit correctly, Prof Raman was totally opposed to the concept of big science. He was openly critical when the independent India's first government took upon the task of building the national science establishment represented by departments of atomic energy, agriculture and the council of scientific and industrial research (CSIR) as well as the Indian council of medical research (ICMR). He even became a recluse and shut himself off from the rest of the scientific world. He spurned all government offers of support to his research activities.

Bitter though he was, his attitude was not borne out of frustration. He had not yearned after any top position. So the question of his being denied that does not arise. He was aware that these positions entailed a heavy administrative and policy-making burden. That he was not cut out for that, he knew from the sad experience at the Indian Institute of Science where he had voluntarily stepped down from the directorship. Rather, the precept that the establishment of these big autonomous organisations, was not only in the intent of scientific progress but also a necessary pre-requisite for nation-building was anathema to him. He sincerely believed that "science was a personal endeavour, an aesthetic pursuit and above all a joyous experience".

He cannot be faulted for holding this view. He belonged to an era dominated by the Rutherfords, the Einsteins, the Bohrs and during which practising what he preached had permitted him to prove that he was second to none. Science during that golden period was indeed an attempt to understand nature. However, Raman had failed to take into account certain developments that had taken place in the early-and mid-forties which had changed the structure of scientific enquiry.

THE trauma of the second world war had inflicted deep wounds even on the scientific fraternity. The Manhattan project and its deadly progeny had shaken the scientist's serene world in more ways than one. One of the fallouts was the realisation that science can sire technology. Until then discoveries and inventions had trodden separate, apparently parallel, paths. The two suddenly merged bringing in their wake the shadow of commercial exploitation. Science could no longer be pursued in divine solitude.

Upto that time progress in science was synonymous with progress in physics. Understanding of the physical universe had then reached a stage where further advancement would not be achieved without access to rather complex and big instrumentation. The experience of the Manhattan project had shown that rapid strides can be taken provided an interdisciplinary team worked together. The days of solo effots were sadly numbered.

The tragedy of Hiroshima and Nagasaki notwithstanding, the Manhattan project had also ushered in the atomic age with colossal amounts of energy ready to be tapped for the benefit of the power-starved world. This was foreseen by the visionary Homi Bhabha, a one-time colleague of Raman, inspiring him to write that, now legendary, letter to the Tata Trust which led to the founding of the Tata Institute of Fundamental Research, cradle of the national science establishment. No wonder Jawaharlal Nehru who had also seen the writing on the wall and hence had chosen science and technology as instruments of economic and social development found in Bhabha, rather than Raman, a kindered soul.

THE self-imposed isolation of Raman should therefore be considered as the righteous, if defiant, posture of a sage who finds it rather late in a successful life to change basic guiding philosophies. It was no mean-minded petty gesture of petulence as Raman's detractors would have us believe; nor was it a stance of *satyagraha* in the Gandhian mould taken to bring pressure to bear on an unyielding government.

The construction of a monolithic scientific establishment was simply a demand of the times. yet, the way that juggernaut appears to have got mired in a morass now, failing to deliver the expected goods, brings to mind the basic principles which Raman cherished, even as one discounts his interpretation of them.

Raman's approach to science was one of passion, curiosity, intense involvement compelling the practitioner to think independently and work hard. That is why Raman found himself unable to understand the obsession of the establishment with foreign training, the spending of large sums of money in the erroneous belief that good science will automaticlaly sprout or the faith in quantity rather than quality. There is no denying that the basic tenets constituting the underpinning of Raman's approach are the cardinal virtues essential for science, be it an ethereal venture of acquiring knowledge or an earthly instrument for developing technology, to take a substantial leap forward. Should Indian scientists rediscover these, it would be the kind of centennial celebration that would rest warm Raman's heart.