Editorial*

N Sathyamurthy, Chief Editor

The privilege of being the Chief Editor of *Resonance* is that I get to learn new things, cutting across disciplines. When P W Anderson passed away at the age of 96, it was clear that here was a man, whose life and science had to be told to the younger generation.

Professor C N R Rao readily wrote a tribute to Anderson. He fondly recalls Anderson's appreciation of Rao's work on cuprates and its role in high-T_c superconductivity. *Resonance* has highlighted the contributions of many great men and women of science over the years. Anderson belongs to a class by himself. Not only did he do great work, he also identified and nurtured great work. The cover page, symbolically, refers to Anderson's garden sketched by an admirer of his. Apparently, Anderson used to insist on thinking before inking. At the same time, he was clear that one must publish immediately what one discovers, without waiting for somebody else to endorse it.

Anderson seems to have coined the term condensed matter physics and led the subject from the front. His work on Anderson localization got him the Nobel prize in 1977. He shared it with his PhD thesis supervisor, van Vleck and Nevil Mott, who used to invite him to Cambridge and continued his work (influenced by Anderson) even after retirement (as per UK norm). I learned for the first time that Anderson was a predecessor to Higgs in proposing the boson that would get the latter the Nobel Prize.

Unlike in the field of movies or music, we rarely have 'fans' in science. But, Baskaran is a fan of Anderson. He adored him and worked with him for more than three decades. Baskaran gives glimpses of the greatness of the man. He specifically points out

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how Anderson mentored young people, nudging them to great discoveries, some of which led them to Stockholm. Anderson took pleasure in other people's discoveries. As a theorist, in addition to interpreting experimental results, he also suggested new experiments and in certain instances, repetition of some experiments.

T V Ramakrishnan, a collaborator and an admirer of Anderson writes about Anderson effects. Normally, *Resonance* reproduces a classic paper of the scientist it highlights in that issue. In the present case, we perhaps should have reproduced Anderson's classic paper on localization. Reserving that to a future issue, we choose to reproduce his paper of 1972, 'More is Different' in the current issue. As it is pointed out by Rajaram Nityananda in his introduction to this classic paper, it brought out a new theme in science. It emphasized how one needs to go beyond discovering fundamental particles, and how everything in Nature may not be derivable *ab initio*. Although he did not use the term 'complex systems' in that paper, the idea of "emergence" of new properties at different levels is there. Anderson's influence has gone beyond the borders of physics. He was truly a great physicist.

The April issue highlighted the characteristics of the coronavirus and went on to emphasize the need for the lockdown we all are going through in India, and the rest of the world. In this issue, Anand Kumar Sharma covers some more aspects of the virus, and Ananda Mukherjee discusses the salient features of the SIR model of epidemiology of viruses.

The importance of using proper standards of measurement cannot be overemphasized in science. Although we have been using the SI units as the standard for quite some time, they were defined on man-made objects: on the length of a platinum-iridium rod and the mass of another platinum-iridium standard kept in Paris. The French *Bureau International des Poids et Mesures* (BIPM) has come up with new definitions for the SI units that are based on natural constants like a transition frequency of the caesium atom, etc. As science and technology advance, needs for finer standards of measurement arise even in everyday life, as evidenced by the

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GPS. 20th May is World Metrology Day, and we are happy to include an article on the new SI by K Indulekha in this issue.

The Wasp Man Raghavendra Gadagkar takes us through his memory lane, and describes in this issue how he fell in love with the Indian Institute of Science, Bengaluru, went there to do his PhD and stayed on to become a faculty member and carved a niche for himself in the field of evolutionary biology. Also, we have in this issue an article by Kim McConkey on ecological disturbances

Under the Classroom section, we have an article by R Padmanabhan on group laws satisfying $1+1=11$.

Coronavirus has shaken all of us up. We have been forced to work from home because of the extended lockdown announced by the government. The office of the Academy is no exception. I must place on record our appreciation of our colleagues in the *Resonance* team carrying out the work from home and making sure that the April and May issues came out in time. Since the working of the printer was not under our control, we have not brought out the hard copies of the April issue yet. We hope to bring them out soon after the lockdown is lifted. In the meantime, I hope you enjoy reading this issue on Anderson and his science and other topics.