with Bhat, a method of using good intersection patterns in Hadamard designs and affine designs to generate a large number of non-isomorphic solutions. Later Singhi extended their methods to classify all (19, 9, 4) designs. V. C. Mavron generalized these results to develop a complete theory to study matroids and groups related to affine designs.

Shrikhande's paper with Bhagwandas on Seidel equivalence of graphs is quite exceptional. They showed that all interesting examples of strongly regular graphs with the same parameters are equivalent in this sense. Seidel, Goethals, Hoffman and Ray-Chaudhuri extended their results considerably.

One of his well-known works is the joint paper with Singhi published in 1974 on the λ-design conjecture of Ryser. They showed that the conjecture is true for all primes. Their result has been only marginally improved so far.

Erdös used to like a joint paper of Shrikhande and Singhi published in 1986, in which they showed that if a conjecture of Erdös and Larson on pairwise balanced designs is true, then the projective plane conjecture is false.

A remarkable fact about Shrikhande, not usually mentioned, is that while in India, he did active research, although holding a good deal of administrative responsibilities. Head of a major department, Director of Centre for Advanced Study in Mathematics, member of several learned societies, member of governing council of the Indian Statistical Institute, member of various committees constituted by these bodies as well as many Indian Universities, it would have been quite tough for an ordinary person to give enough time to do his own research, let alone excel in his work. The Centre of Advanced Study in Mumbai University under his directorship was considered to be one of the best centres of research in Combinatorics in the world and attracted many experts from all over the world.

These were the days of license raj in India. Universities did not have enough funds. But Shrikhande with his simple but effective style, used meagre resources very well. He for example rarely used formal paper to write down his research papers. He used to open up used large envelopes, which he used to get in mail and use them to write. Most of his research was sent to typist on such envelopes.

One admirable quality of Shrikhande is that in spite of his great achievements he continued to be kind and courteous and genuinely helpful. We have often heard that among the famous people, Shrikhande may be one of the few with a large circle of friends and admirers. Many among Mathematicians in India working in Combinatorics, like V. N. Bhat Nayak, S. S. Sane, N. M. Singhi, K. S. Vijayan, S. B. Rao, A. R. Rao, Vijayakumar, R. Naik have sweet memories of help and guidance, Shrikhande had provided, at crucial moments of their careers. On the initiative of some of these, the Indian Statistical Institute organized an international seminar in his honour in 1982, on the occasion of his 65th birthday. Some of the best known names in Combinatorics from around the world were present on that occasion.

After the passing away of his wife Shakuntala almost a decade ago, Shrikhande for some years divided his time between India and USA, where his children Mohan, Asha and Anil are well settled. One of his sons Mohan Shrikhande himself is a famous Mathematician.

For last few years he has been mostly staying near Vijaywada in Andhra Pradesh in India. He had a large family of children, nephews, grandchildren, students, spread all over the world, who used to regularly visit him and keep in touch with him via phones, skype, etc. wherever they were. Till end at the age of 102, he had kept alive his interest in Mathematics. Whenever any of us called him, including his son Mohan, he will ask 'what are you doing in Mathematics' and keenly tried to understand problems and results.

He was an amazingly inspiring person. He maybe no more but his presence will be felt always via his Mathematics and in sweet memories of hundreds of researchers associated with him.

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Virender Lal Chopra (1936–2020)

Professor Virender Lal Chopra, an eminent agricultural geneticist and biotechnologist, passed away on 18 April 2020 at New Delhi. He was born on 9 August 1936 in Adhwal, a small village in the periphery of Rawalpindi in West Punjab that was part of British India. His father Harbans Lal and mother Sukhwanti moved to Delhi following partition of India in 1947 which also was the year of India's independence. His schooling was at Ramjas School, Delhi. He did B Sc (Honours) Agriculture from Central College of Agriculture (affiliated to University of Delhi), which was located at the Indian Agricultural Research Institute

(IARI), New Delhi in 1955. One of us (P.C.K.) joined the Central College of Agriculture two years later. During 1955–1957, Virender did his Associateship at the IARI with the other (M.S.S.), who had joined the Botany Division in 1954. Then he obtained the Senior Humboldt scholarship and studied at the Institute of Genetics, University of Cologne. On his return, he joined the cytogenetics group led by M. S. Swaminathan at the then Botany Division (which was subsequently changed as Genetics Division) of the IARI. The cytogenetic research during the 1950s and 1960s at the IARI was internationally acclaimed as among the

best in the world. Pioneering research conducted by the Swaminathan Group on the indirect effects of ionizing radiation initially included A. T. Natarajan, V. L. Chopra, Satya Nirula and later one of us (P.C.K.). In 1964, he got a great opportunity to work under the guidance of Charlotte Auerbach in Edinburgh, Scotland for his Ph D. Auerbach ('Lotte' to many) had won international acclamation for demonstrating for the first time that certain environmental chemical agents are genotoxic and mutagenic. Chopra obtained his Ph D in 1967 from the Institute of Genetics of the University of Edinburgh. Then he returned and started his work in the Genetics Division of IARI.

Chopra became the Director of IARI in 1979. Just after a year, he returned to academics as Professor of Genetics and remained in this position until 1985, when he shifted to the newly established National Research Centre on Plant Biotechnology as Professor of Eminence and Director of the Centre. He also served as a member of the scientific advisory committee to the Prime Minister of India from 1986 to 1990. He moved to Vietnam in 1990 as Chief Technical Adviser on a UN FAO assignment for a duration of 15 months. During this period, he assisted the Vietnam Government to establish the Agricultural Genetics Institute (AGI) in Hanoi. In 1992, he was appointed the Director-General of the Indian Council of Agricultural Research (ICAR) and Secretary of the Department of Agricultural Research and Education, Government of India. After his retirement from the ICAR in 1994, he continued his association with the agency as B.P. Pal National Professor. He was also appointed a Member of the science council of the Consultative Committee on International Agricultural Research (CCIAR), the largest research entity run on public funding. At about the same time, he was also a Member of the then Planning Commission of India.

Chopra was a wonderful teacher, who combined theory and practice in education. Apart from being an eminent geneticist and teacher, he was also a great institution-builder. Among the institutions he helped to build and which are even today very active are the National Academy of Agricultural Sciences and the International Genetics Congress Trust. He was a founder member of the Executive Council of the National Academy of Agricultural Sciences and also served the academy as its Secretary, Vice-President and President over a period of time. Chopra was the first Indian scientist to be elected as the President of International Genetics Congress from 1983 to 1988, evidence of the esteem and eminence in which he has held. In both these cases, he gave a lot of his time to ensure that their work is meaningful. He was a member of many trustee boards of Gujarat State Fertilizers and Chemicals Research Foundation, Tea Research Association, International Rice Research Institute (IARI), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and International Maize and Wheat Improvement Center (CYMMIT). He was Vice-Chairman of the International Board for Plant Genetic Resources, the Present-day Biodiversity International.

Chopra greatly assisted one of us (M.S.S.) in registering the M.S. Swaminathan Research Foundation (MSSRF) in New Delhi as a not-for-profit scientific trust on 17 May 1988. With M.S.S. as the Founder Chairperson, Chopra along with V. K. Ramachandran became a founder trustee. He served the MSSRF for close to a decade as a trustee.

Chopra was author of several books and articles on plant breeding and genetics. Some of these are: *Plant Breeding: Theory and Practice, Handbook of Industrial Crops, Search for New Genes, Approaches for Incorporating Drought and Salinity Resistance in Crop Plants, and Applied Plant Biotechnology*. He was elected Fellow of National Academy of Sciences, Indian National Science Academy (FNA), Indian Academy of Sciences (FASc), Third World Academy of Sciences (TWAS) and the National Academy of Agricultural Sciences. He was honoured with honorary doctorates by Banaras Hindu University, Chandrashekar Azad University of Agriculture and Technology, and a few others.

The Government of India bestowed upon him the civilian award of *Padma Bhushan* in 1985. He has been awarded a large number of prestigious awards – the Borlaug Award of the Coromandel Fertilizers in 1983; the Federation of Indian Chamber of Commerce and Industry Award in 1987 and also Honor Summus Medal of the Watumull Foundation, USA in 1987.

Despite his great accomplishments, he was always unassuming and showed respect for others in lower rungs of position and calibre. Possibly because of his involvement in research on mutagenesis and genetic toxicology his role as a plant biotechnologist was closely adhering to 'precautionary principle' with emphasis on biosafety of genetically engineered crops for human consumption.

Chopra will long remain a role model for all of us, an example of a fine teacher and researcher. He was one of the rare scientists who could be referred to as the scientists' scientist.

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Edited by S. K. Satheesh, and printed & published by G. Madhavan for Current Science Association, Bengaluru 560 080.
Typeset by WINTECS Typesetters (Ph: 2332 7311), Bengaluru and Printed at Lotus Printers Pvt Ltd, Bengaluru (Ph: 2320 9909)