

A Tribute
Professor Krishnaji



(January 13, 1922 - August 14, 1997)

Edited by
Govindjee
Shyam Lal Srivastava

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Urbana, Illinois, USA

and

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The Cover

A photograph of Krishnaji (Dada), 1980

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Remembering

Three Generations of Krishnaji

Krishnaji (Dada) (1922 – 1997)

Bimla (Bhabhi) (1927 – 2007)

Deepak (1949 – 2008)

Ranjan (1952 – 1992)

Manju (1954 – 1986)

Neera (1973 – 1988)

Rajya Ashish (1983 – 1986)

Rajya Vishesh (1985 – 1986)

Preface

The primary goal of this book is to pay tribute to Professor Krishnaji, who we call Dada. He was a great human being, a friend to the young and the old, a visionary teacher, a remarkable scientist, an institution builder, an academician, and an excellent and effective administrator. And, at the same time, he was a loving and loyal son, a loving brother, a loving husband, a loving father, and a loving grandfather. A second and equally important goal of this book is to present his life and that of his dear wife Bimla Asthana (*Bhabhi* to one of us, Govindjee (G), and *Jiya* to the other, Shyam Lal Srivastava) to his extended family, friends, relatives, students and professional scientists around the World. A unique feature of this book is the inclusion of photographs of his entire family that includes the families of his brothers (Gopalji and one of us, G) and his sister (Malati Sahay).

The book is divided in four parts.

- **Part A** includes the recollections and the tributes by Krishnaji's contemporaries, associates and his graduate students. It begins with his profile by Suresh Chandra, Abhai Mansingh and Shyam Lal Srivastava (Chapter 1). This is followed by tributes and recollections by: Shanti Swaroop Bhatnagar (Chapter 2); Baldev Behari Lal Saxena (Chapter 3); Arvind Mohan (Chapter 4); Ram Gopal Rastogi (Chapter 5); Ganesh Prasad Srivastava (Chapter 6); Satya Prakash Khare (Chapter 7); Suresh Chandra (Chapter 8); Abhai Mansingh (Chapter 9); Rameshwar Bhargava (Chapter 10); Bhartendu Srivastava (Chapter 11); Om P. Srivastava (Chapter 12); Shyam Lal Srivastava (Chapter 13); Ashoka Chandra (Chapter 14); Ramji Srivastava (Chapter 15); Pradip Kumar (Chapter 16); Prem Chand Pandey (Chapter 17); Nabin Kumar Narain (Chapter 18); and Mohan Swarup Sinha (Chapter 19).

- **Part B** includes the recollections and tributes by his family members: Gopalji (Chapter 20); Malati Sahay (Chapter 21); Radha Krishna Sahay (Chapter 22); Govindjee (Chapter 23); Anju Okhandiar (Chapter 24); Purnima Ranjan (Chapter 25); Rita Sinha (Chapter 26); Chitra Kumar (Chapter 27); Avinash Varma (Chapter 28); and Nandini Sinha (Chapter 29). [A complete list of Krishnaji's extended family members is provided on pages 85 and 86.]
- **Part C** is unique to this book; several students and family members have shown their respect to Dada and Bhabhi by providing photographs. This section shows 9 photographs (Figures 1-9) related to Dada's academic life and 75 photographs (Figures 10-84) related to his personal life and those of the families of his two brothers and his sister.
- **Part D** includes: A selected list of Krishnaji's publications; a reprint of his 1961 general article on '*Development of Scientific Research in India*'; a short write-up on his 1982 retirement celebration and on his 70th birthday celebration; also included is a short write-up on Allahabad and Allahabad University. This is followed by beautiful original Hindi texts by Malati Sahay and Radha Krishna Sahay, based on which their English versions were prepared for Part B. Part D ends with a collection of '*Perceptions of the Divine*'.

We have read and edited the text provided by all the authors for Parts A and Part B, and have prepared Parts C and D. We have deep affection and admiration for Dada that is based on our own experiences. He was a mentor, a guiding light, and a good friend to both of us and we both loved him in different ways, and, he loved us too. To us, he was a person larger than life. He clearly was a man of great character; he was warm, thoughtful, and generous. He inspired others to achieve and reach their goals. He was a visionary, a passionate and a brilliant teacher; at the same time, he was a wonderful family man and a great and a good friend to his students and colleagues. Many were blessed by his support and his kindness. He had a big heart, a clear mind, and an unmatched dedication and

devotion to serve others, especially those in need. He always had a sympathetic ear and he committed himself to serve people; he always worked to assist those who are less fortunate. He inspired admiration, respect and devotion from all those who came in contact with him. When he made a promise to someone, he kept it no matter what. Whenever tragedy befell to anyone, he was always there for them. He himself suffered personal setbacks and had to face terrible sorrows (such as death of his son Ranjan), but he continued to do his duties and worked as hard (or harder) for his profession and for the welfare of his extended family. He was not only adored by his extended family, but also respected by all his colleagues.

Both of us are grateful to both Dada and Bhabhi (Jiya) for the innumerable gestures of kindness and generosity they have extended to us, and for the concern they had for our lives.

We hope that this book will inspire others to follow the footsteps of both Dada and Bhabhi. With inspiration in mind, one of us (G) has also collated a text on '*Perceptions of the Divine*', obtained from his various friends at Urbana, Illinois, USA (see their names under Acknowledgments). As noted earlier, it is included in Part D.

Acknowledgments

This book will not have been possible without the help of many. First, we thank all the twenty eight authors in **Part A** and **Part B** of this book. Special thanks go to Arvind Mohan (Swami Arvind Chaitanya) who provided his article within 24 h of our invitation. We are especially indebted to Anju Okhandiar for the English version of the texts by Malati Sahay and Radha Krishna Sahay, based on their Hindi texts. We also thank Rajni Govindjee for reading the book before it was typeset. Photographs for **Part C** were provided by many family members, especially Nandini (Ninni) Bhatnagar, Gopalji, Sanket Ranjan, Soubhagyadeep, Anju Okhandiar, Rita Sinha, Chitra Kumar, Elfi Chandra, Anita Govindjee, and Rajni Govindjee. In addition, some photographs were taken from the book: *Amma and Babuji: Our life in Allahabad* (edited by Govindjee; PDQ Printing,

Urbana, Illinois, 2007). We thank Samir Shyam for improving some of the photographs and making final corrections in the text.

We are thankful to Dilip Chhajed, Pradeep Dhillon, Stephen Downie, Hans Hock, Zarina Hock, Jain Swarup Jain, Braj Kachru, Yamuna Kachru, Rajeshwari Pandharipande, Rizwan Uddin and Narendra Ahuja for their participation in our quest towards the '*Perceptions of the Divine*'.

Finally, we are highly grateful to Bhanu Pratap Singh for his immense and untiring contribution and the enormous amount of time he has given to this project: e-mail flow to the contributors; and typesetting of the entire text and of the photographs. We thank Late Mohan Swarup Sinha for his gracious help, and Jamil Ahmad for his excellent service in printing the book.

January 13, 2010

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Part A

Recollections of Professor Krishnaji



Vijaynagar Hall and its tower (formerly Muir
Central College), University of Allahabad

by

Contemporaries, Associates and
Graduate Students

A Profile of Professor Krishnaji¹

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Professor Krishnaji was born on 13 January 1922 at Allahabad, Uttar Pradesh (UP), India. He had his early and higher education in Allahabad. After his secondary (intermediate) education at Ewing Christian College, Allahabad, he joined the University of Allahabad in 1940. In 1944 he was awarded the Master of Science degree in Physics, with specialization in *Wireless*. He joined research with Dr. Govind Ram Toshniwal, a leader in Instrumentation, but he had to take over the responsibility of teaching and development of the discipline of Wireless (Electronics) in the Department of Physics, University of Allahabad, in 1945, as Dr. Toshniwal had left Allahabad to open his own company. Prof. Krishnaji took command of the situation immediately. He carved his own research career in newer areas of Physics which were developing after the Second World War. Before he was 30 years of age, Krishnaji's name was synonymous with electronics not only at Allahabad, but at all the neighboring institutions of higher learning. Many would not know that fate had left him not only to lead Electronics teaching and Research at the University of Allahabad, but also to nurture his family consisting of his mother (Savitri Devi), two brothers Gopalji and Govindjee, and a sister Malati due to the sad demise, in 1943, of his father Vishveshwar Prasad¹. In this effort, his wife Bimla joined him whole-heartedly. It

is admirable that his professional rise was not at the cost of his family life and he received high esteem from both his family members and students.

Under the leadership of Prof. Krishnaji, the Department of Applied Physics (now known as J.K. (Juggilal Kamlapat) Institute of Electronics & Telecommunication) was established. His first laboratory of “Experimental Microwave Spectroscopy” was inaugurated by Pundit Jawaharlal Nehru, the first Prime Minister of India. (See Part C, Fig.1, p. 161.) However, he remained in the Department of Physics where he was developing his research laboratory. He left Allahabad for a brief period and joined Defense Science Organization at Kirkee, Pune, in 1959, but soon realizing that the University is a better place for exploring the frontier areas of science of one’s own choice and training young generation of researchers, he returned to the University of Allahabad in 1960. In 1965, Prof. Krishnaji left Allahabad again to become Professor and Head of the Physics Department, Jodhpur University Jodhpur, and established good teaching and research facilities there in a short span of time. However, he could not forget his first love, Microwave Electronics Laboratory at the University of Allahabad, and returned to the University of Allahabad as Professor of Physics in 1966. Later he held the position of Pro-Vice Chancellor of the University of Allahabad for about four years.

Professor Krishnaji was a living embodiment of an ideal teacher. He was a friend, philosopher and a guide to his students. He believed in making each of his students a “complete person”. There was something special about his personality as a teacher. Each of his students felt that they were getting the same (if not better) attention and affection from him. That is why his students all over India and abroad have the same sense of gratitude towards him whether they are in administration, research, teaching or business. His personality as a teacher can only be compared with an “*aura*” of sweet fragrance, which is equally shared by all around him. Krishnaji was a pillar of strength to all his students, in their moments of desperation. His blessings and guidance acted as a *shade* where one could rest in moments of despair. Although benevolence was the hallmark of his

character, he was not a teacher who went about distributing favors and positions to his students. Instead, he aroused their confidence and helped them to utilize their hidden talents so that favors and positions came automatically to them. He taught the ways of life and the manner of expression in which humility and firmness were intermingled. His students had observed him suggesting to others to say “no” even to superiors if he or she disagreed with the authority in principle. Teaching was a mission to him. Even when he was a Pro-Vice Chancellor, he always found time to teach his BSc classes in preference to MSc classes.

Professor Krishnaji’s journey in the vast ocean of research started almost rudderless. His optimism and conviction helped him to find his way. The end of the second World War (WW II) provided the microwave instrumentation, which, in 1946-1947, had led to the study of the Physics of Molecules by Charles H. Townes and Walter Gordy in USA. The brilliance of young Krishnaji saw the importance of developing this technique in India for studying the problems of Molecular Physics. Those were the days when nobody dared to enter sophisticated experimental areas in India. Negative thoughts had no place in the life of Prof. Krishnaji. He started fabricating microwave components of comparable international quality with almost nothing available in the country. In 1950, a small research group for studying microwave absorption in gases was established in Allahabad under his leadership. His early measurements on microwave absorption in gases at moderate pressures with Prem Swarup and Ganesh Prasad Srivastava found appreciative references in contemporary research publications and advanced texts. His early development of microwave components created a culture, which led to the indigenous production of microwave test benches in India. Now was the time for diversification, which he carried out in a unique way. He chose the problems related to microwave interaction with gases, liquids and solids. He defined the problems first and subsequently developed the required instrumentation in consonance with it. He was a leader in studying the composite dielectrics in early 1950s with Shankar Swarup, which today is considered a front line area of research. Prof. Krishnaji never hesitated in developing sophisticated experimental

arrangement if the nature of the problem so required. For the first time in India, he developed, with Suresh Chandra, the modulation spectroscopy in the microwave region, extensively pursued later by Shyam Lal Srivastava, Late Arjun Singh Rajput, Vinod Prakash, Late Suresh Chandra (Agarwal), Gopal Krishna Pandey, Prem Chand Pandey, Kalyan Kumar Kirty, Late Gajendra Kumar Johri and Nabin Kumar Narain. Development of the dielectric spectroscopy of liquids ran parallel to this effort and a wide variety of techniques were developed by Prof. Krishnaji and his many associates (Surendra Kumar Garg, Abhai Mansingh, Dina Nath, Suresh Chandra Srivastava, Vinod Kumar Agrawal, Pradip Kumar, Mohan Swarup Sinha, Maya Swarup Mathur, Shyam Behari Lal, Prem Prakash Srivastava, Dinesh Chandra Dwivedi and Shrimati Archana Sinha). The low frequency Electron Spin Resonance set up for studying free radicals developed by Prof. Krishnaji with late Baikunth Nath Mishra (assisted at initial stages by Subhas Chandra, Bhupendra Swarup Mathur and Ashoka Chandra) can now be seen as a standard equipment in many postgraduate laboratories. Ram Kripal continues working on ESR (Electron Spin Resonance).

By 1960, Prof. Krishnaji's laboratory in microwaves at the University of Allahabad had become an internationally recognized center of excellence. In the 1960s, international hot field of research was LASERS. Prof. Krishnaji developed elliptical cavity for Ruby Laser in 1968 with Rajendra Kumar Laloraya and late Bibhuti Prasad Tripathi. Prof. Krishnaji and his associates always attempted to find the theoretical basis for their experiments, be it a case of microwave lineshape, liquid dielectrics, composites, relaxation in single crystals (by Suresh Chandra, with Vinai Krishna Agrawal), or nonlinear polarizability at laser frequency (by Shyam Lal Srivastava with late Bibhuti Prasad Tripathi). He also helped in starting thin film work at the University of Allahabad, with Ramji Srivastava and Parmendu Kant.

Prof. Krishnaji had many study tours and visits abroad; he delivered invited talks at many international conferences all over the world. He spent a year from May 1970 to April 1971 at the University of Queensland, Brisbane, Australia as H.C. Webster Visiting Fellow.

Prof. Krishnaji's students, spread all over the country, have established centers in Microwaves and Dielectrics research and many new emerging fields. Prominent centers have grown around his students in various universities, institutions and national laboratories.

Indian Science can certainly be proud of Prof. Krishnaji's indigenous high-level instrumentation innovation and research in physics carried out with meager resources. Emulating Prof. Krishnaji's ideology in research should serve as a guideline for carrying out purposeful research in the present climate of changing world order and resource crunch.

There is no way one can list all the honors and awards won by Prof. Krishnaji. Some of the more prominent awards are: the Hari Om Trust Sir C.V. (Chandrasekhar Venkat) Raman National award for outstanding experimental research in Physical Science in 1976; Fellow of the National Academy of Sciences, India; Senior Member of the Institute of Electrical and Electronic Engineers (USA); President of the Physical Science Section of the National Academy of Science, India, in 1974; University Grant Commission National Lecturer in Physics in 1976; Member Secretary of the National Committee of International Union of Pure and Applied Physics, 1978-1981; University Grant Commission National Fellow, 1977-1980; and President of the Physics Section of the Indian Science Congress Association, 1982-1983.

Prof. Krishnaji is fondly remembered as an excellent academic administrator, be it as the Pro-Vice Chancellor or the Dean of the Faculty of Science or the Head of the Physics Department at his Alma Mater, the University of Allahabad.

Professor Krishnaji breathed his last on 14th of August 1997.

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1. *Amma and Babuji: Our Life at Allahabad* (Govindjee, Ed.), March, 2007, PDQ Printing, Urbana, Illinois, USA.

Krishnaji – My Class Fellow

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I first came to know Krishnaji as my class fellow during 1942-1943 in our MSc (Previous) Physics class at the University of Allahabad. I had come from the honors stream and he from the general course. We had been allotted the same experiment. Even at that early stage, he showed a special aptitude for doing experiments. In MSc (Final), he opted for the section on *Wireless* and I on *Spectroscopy*. During this period, he lost his father in December 1943 but, in spite of this calamity, he still obtained a first class in MSc (Physics) in 1944. During those days only a few could get a first division in MSc Physics. This showed his brilliance, grit and determination to fight the difficult circumstances. Being the eldest son of the family, he had simultaneously the responsibility of educating his two brothers Gopalji and Govindjee and a younger sister Malati.

The year 1942 was also eventful for the Physics Department in the sense that Prof. K.S. (Kariamanickam Srinivasa) Krishnan had joined as Professor and Head of the Department after Dr. Megh Nad (also written as Meghnad) Saha had left Allahabad in 1938 to join Calcutta University as Palit Professor. We were very fortunate to be taught by Prof. Krishnan, an eminent scientist and educationist. Prof C.V. (Chandrasekhar Venkat) Raman, a Nobel-laureate in Physics, also visited the department during this period and gave stimulating lectures, and inspired many brilliant students to take up Physics as a career. After MSc (Physics), I joined as a Lecturer in Allahabad Agriculture Institute at Allahabad and Krishnaji was appointed as a Lecturer in the Physics Department of the University of Allahabad. We continued to be in touch with each other. I became a Lecturer in the Physics Department at Allahabad University in 1949. Thus began an association which lasted a life time.

Soon after Krishnaji's appointment, Dr. Govind Ram Toshniwal left the department to establish his own company, later known as the Toshniwal Brothers Ltd. India. Krishnaji took over the charge of the wireless lab. This was a tall order as Dr. Toshniwal, the founder of the wireless section, was a great teacher. Krishnaji proved equal to the occasion. He organized the laboratory and research and during his stewardship in all these years, this center of *Microwave Research* became recognized all over India. Later in his life, Krishnaji received the prestigious Sir C.V. Raman Award for his pioneering basic research on Microwave Spectroscopy, Microwave Transmission and Solid State Physics (See Part C, Fig. 3, p. 163); the prize was given to him by the then Prime Minister Indira Gandhi. His life revolved around the laboratory and his co-workers. He was very helpful in setting up my infra-red lab, in 1959, after my return to the Department of Physics, University of Allahabad, from University of Toronto, Canada.

Krishnaji had a great love for the department, and he was always thinking of ways and means for its advancement. He was definitely a very dedicated and innovative scientist, taller than many Physicists of our era.

For me, he was a perfect gentleman, a loyal friend and a tower of strength in the time of need.

Our Dada, the Great Professor Krishnaji

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Nineteen thirties to nineteen fifties were the golden days of the University of Allahabad. In every field, whether academic or administrative, the University was on the top and very rightly called the “*Oxford of the East*”. Faculty members in all the departments were outstanding, including distinguished academicians like (late) Megh Nad Saha (Physics), Neel Ratan Dhar (Chemistry), Amiya Charan (A.C.) Banerjee (Mathematics), Dakshini Ranjan (D.R.) Bhattacharya (Zoology), Julian Mitter and Shri Ranjan (Botany), Sir Shafaat Ahmad Khan, Beni Prasad, Tara Chand and Ishwari Prasad (History). In the Hindi department, we had Dharendra Verma and Ram Kumar Verma, among others. In the English department, we had Raghupati Sahai ‘Firaq’ Gorakhpuri, Satish Chandra (S.C.) Deb, Harivansh Rai Bachchan (father of the movie idol Amitabh Bachchan), and Phiroz Edulji Dastoor. There used to be a keen contest between the departments to surpass each other in excellence.

When Megh Nad Saha left the headship of the Physics Department in 1938, the Late Amar Nath Jha, the most illustrious Vice-Chancellor of University of Allahabad, had negotiated with Erwin Schrödinger, of Germany, the Nobel laureate, founder of the quantum mechanics to fill the gap, to which he had agreed. But unfortunately the Second World War broke out on September 3, 1939 which disrupted the plan. However, late Sir Kariamanickam Srinivasa (K.S.) Krishnan, an illustrious student of Sir Chandrashekhara Venkat (C.V.) Raman joined the Physics department. Sir C. V. Raman visited the Department of Physics quite often and gave scientific talks on

various subjects including his new field in Science: Smell, Taste and Sight.

Hence to get admission, especially in the post graduate classes, was rather difficult as the competition was very tough for a very small number of available seats. Only the most brilliant graduates could get in. Our Dada, fondly called so by some of us, the Late Prof. Krishnaji, was a meritorious graduate and readily obtained admission in the MSc course in Physics. Just after completing his MSc, he joined the Department of Physics as a faculty member. The knowledge of his brilliance as an excellent teacher and researcher soon spread far and wide. He guided a large number of doctoral (DPhil) students in the field of *microwaves*.

Dada's brilliance was spontaneous as revealed in all walks of his life, understanding the problems and providing their solutions. He commanded tremendous respect from students and associates alike. Along with the academic pursuits, he rendered very valuable services to the University administration in his capacity as the Pro-Vice-Chancellor of the University of Allahabad, a position just next to the Vice-Chancellor, during the full term of the vice-chancellorship of the late Ram Sahay and during part of the term of Dr. Prahlad Das Hajela. Krishnaji had very good rapport with all the students, whether they opted to go to the academic or the administrative field. On several occasions of students' agitations, his qualities of the '*head and the heart*' defused crises.

Dada was a man of many qualities. Despite his problems of assorted nature, he would always keep his cool. He was a very sincere and loyal friend, always ready to help. In a team work he would shine as a leader of all. For him, family and friends were of equal value, helping all of them to his best capacity.

He promoted the National Academy of Sciences, India to reach greater heights with his wise guidance. Today it is an Academy known internationally.

After retiring as Professor of Physics, he joined Mahesh Yogi's organization as a science advisor. Again, there, he made his mark, but due to the most unfortunate death of his younger son (Raj Ranjan) in a car accident, he decided to leave Mahesh Yogi ji to rehabilitate the younger son's family to bear such a great tragedy.

He left us on 14th August 1997 due to *stroke* at a comparatively early age, with great loss to his family and friends.

May his soul rest in peace!

* The editors are grieved to note that Dr. B.B.L. Saxena died on 16th May, 2010 due to complications following gall-bladder cancer.

Professor Krishnaji and His Time with Us: A Loving Tribute from a Former Student

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Suddenly, one shivering winter evening Professor Shyamlal Srivastava, a colleague from the Physics Department, of the Allahabad University, walked into my sitting room to apprise me of a noble resolve to publish a booklet in memory of our loving teacher, Professor Krishnaji, and pay our tribute to his greatness as a teacher, as a researcher and as a man. I was happy that he had thought it worthwhile to give me a chance to write a few words and to share in this good cause.

We sat down exchanging memories of the days that were and soon the chilly winter was gone in the warmth of loving reminiscences of the old teacher, and other colleagues who had left us as well as the several incidents that left sweet as well as sour impressions on our minds. After Shyamlal left, I sat down and several images flashed past my mind; the thoughts of the days when I was younger, of the friends I had made who are, alas, no more, of the teachers good, bad and indifferent, of the pranks I played in the class and outside, and of lots of other memories that came flooding in.

After some hours of these dreams, I thought it better to write down what was relevant to record my humble tribute lest the thoughts wither away and the warmth of the loving reminiscences get lost in the memory lane leaving me wordless.

My first image of Krishnaji was, when as a student of the K.P. (Kayastha Pathshala, now Kali Prasad) Inter College, I used to visit Ratan Kumar, living next door to a lanky, tall, *dhoti-kurta* clad boy,

generally addressed as ‘Dada’ by all the juniors around him. The first impression was of a serious and reserved person who kept to himself and seemed a determined, ‘no-nonsense’ personality. Days and years passed by; our interest varied and this image just merged into a forgotten chapter.

I came to know Krishnaji better when after my MSc (Previous), I wanted to opt for a study of “*Wireless*” as my special subject in the MSc (Final) class. In those days, X-rays and Spectroscopy were less fancied options—almost everyone wanted ‘Wireless’. Professor Saligram Bhargava, the then Head of Physics, an unassuming soft-spoken person in Rajsthani Chooridar, Kurta, Saafa, had the task to persuade, sort out our claims, and to try best to satisfy all and fill up the seats for all the three subjects. Not being a brilliant student, who had passed the MSc (Previous) examination without high marks, it was but natural that my admission to the coveted branch of specialization would be denied. But, Professor Bhargava was a kindly soul and he relented to give me a seat in the “Wireless” class, perhaps by giving me credit for being the ‘Ward of a teacher’ (my father Dr. Piare Mohan was a renowned and respected teacher in the Department of Mathematics, University of Allahabad).

In the “Wireless” class, I sat face to face with my teacher Krishnaji. He was calm, composed and in full command of the subject. This was very unlike the other senior teacher Dr. Bishambhar Nath (B.N.) Srivastava, who taught the same subject but left us ‘bored’ and uninterested. Very few of us paid attention to him or his words, and we just whiled away the minutes we had with him. Sometimes, our willful disturbances grew loud enough to reach his ears when with a mumble ‘What is it?’, and then in the same breadth, he would say ‘So, we have...’ and his lecture continued.

No such liberties were imaginable in Krishnaji’s lectures. His subject matter seemed interesting, well prepared & delivered, and for reasons unknown, a fear was ever present; we tried our best to behave as keen and willing to grasp the lecture matter. How an aura of awe and respect was present in his class is still a mystery; it just happened.

When afterwards, I was appointed a Lecturer at the University, this mysterious quality of commanding awe and respect came to my

lectures too, while some more academically sound and competent friends could not command this magical touch. There was reverence around, and my teaching led to a very intimate relationship with the students. As Krishnaji's students, we fully enjoyed this happy relationship with him as well.

Another great aspect of Krishnaji's teaching was the very intimate, person-to-person interaction that we derived in his practical (laboratory) classes. In the laboratory class, the problems faced are even more challenging, both for the teacher and the student: one may have very religiously followed the book, but things refuse to relent and yield the 'wanted' results. I remember Krishnaji pondering over our drawn graphs, and our connections on the apparatus, and then coming to conclusions. Following his instructions, or mostly by his 'tentative suggestions', the behavior of the wayward instruments underwent a magical change!

I am very much of the opinion that teaching or learning Physics should be an exercise mostly dependent on experimentation, and in this Krishnaji was a role model in as much as he gave intense attention to the laboratory equipment—their purchase, their set-up, needed repairs and maintenance. There are teachers who lack the know-how of instruments, and just shy away from the problem that a student may face. But, Krishnaji was ever willing to go to the work place and "soil his hands", just like an eager student. This approach endeared him among his students; as a fall-out, his lectures too commanded respect.

I remember Krishnaji's interest in practical aspects of Physics from an assembled 100 Watt radio transmitter, set up in the top corner room of the department. Here, his keen students, like the class topper Brijnandan Swarup, used to do work with Krishnaji, and the technician Ram Chandra would be hovering around with soldering iron and assorted meters. I personally, and the likes of me, kept out of the way as these things have a habit of eating into your precious time, making you absorbed in unwanted and unimportant (from the examination point of view) chores.

Another love for instrumentation of Krishnaji was two units of an army-surplus big radar equipment. They had a seat inside the room like structure, housing hundreds of components, wiring jungle,

antennae and meters galore, cathode ray tubes probably, and unknown mysteries. We could see him sitting inside this ‘gadget’ for hours, in hot sun and rain, trying to manage the affairs—to what result I could not fathom. Nevertheless, it impressed me as certainly the love for such work was never before or afterwards seen in any other teacher that I know of. In this, Krishnaji was unique.

Once at some function in the Physics Department, under Professor Vachaspati, I had to say a few words. Then, I cited Professor Krishnaji as a person who had lived a life of self denial and even missed the opportunity to attain a research degree. I mentioned his sacrifice to set up the highest educational facility for his younger brothers, as also his sense of duty towards his old and ailing mother. Prof. Vachaspati later on in his own way told me that this was nothing worth mentioning and I should not have unduly made a martyr out of Krishnaji who could not get a research degree due to a lack of needed competence! For a person who had guided dozens of PhD students towards successful research degrees, such remarks only show the personality of the speaker; for, indeed there are none as blind as those who will not see. To my mind, it was a matter of faith with Krishnaji that merit and research were not in need of a degree, or seal of approval, and that their standard and quality would win whatever recognition was due from those who had competence to discern his work, and its true worth. Such thoughts deserve our veneration and emulation.

Many of the readers of this tribute may not know that the first research paper that Krishnaji wrote was through the inspiration of Dr. Rajendra Nath (R.N.) Ghosh. In this paper¹, a pulse electronic device was used; interestingly, I had later used the same for my research degree. Those were the days when Dr. Ghosh, among other acoustic researchers, had pioneered the ultrasonic research at Allahabad University; it was here, where the first paper of Krishnaji was published¹. Later, several other papers, on this topic, followed from my work, much before Dr. Gurudev Saran Verma was ready with his work. But, at the recent ultrasonic meet, these pioneering papers were not acknowledged. Indeed, the dome and the tower of the Muir College are seen from afar, but the foundation stones are buried deep, forgotten and unremembered.

When Krishnaji was appointed Professor of Physics at Jodhpur University, he invited Dr. Suresh Chandra Srivastava and me to conduct BSc Practical Examination there. He wanted to establish a healthy precedence, as there the practical examination was highly vitiated and remarkably flawed. We set an example and caught some students as well as teachers in the use of unfair means. In spite of local pressure, Professor Krishnaji held out for exemplary punishment for them, breaking new grounds to preserve the ‘sanctity, the purity and the chastity’ of examinations.

In his retirement, Krishnaji was drawn to Maharishi Mahesh Yogi’s TM (Transcendental Meditation), and called upon me to give him some writings of Bhagwan Shree Rajneesh, now known as *Osho*. On enquiry, I found that he was planning to write a book on the subject of meditation. In the humblest of words I tried to say that without practically going into meditation, or experiencing only one method, it was not prudent to attempt to write such a book. He listened to me quite attentively and even undertook to go into the practice of *Osho*’s techniques. Incidentally, Osho has given over a hundred techniques for meditation! The idea of writing was shelved and ultimately dropped.

With the above incident, a great characteristic of Prof. Krishnaji comes to light—that he was not averse to learning even from his students, provided it was the truth that was being said. Such humility, such absence of ego (*nir-ahamkaar*), such love for the truth is indeed a very rare quality. Professor Krishnaji possessed this in abundance. With these words, I end this *Tribute* though there remains much more to be said. Wherever you are, our respected and beloved teacher, we offer our humble gratitude for what you taught us and what high ideals you set up for us to be guided in your footsteps. Amen!

1. Krishnaji, Determination of elastic constants of solids by pulse method. *Proc. Nat. Inst. Sci., India* **16**: 227-234 (1950).

Professor Krishnaji

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I am very happy to contribute some of my memories of my association with Professor Krishnaji (for brevity, I will refer to him as Krishnaji in the text below). I was introduced to him before I joined his section, called “*Wireless*”, for my MSc (Final) course in 1947. I had earlier completed the diploma of Workshop Practice and was always keen to do experimental research, with my own hands. This interest helped me in developing a special association with Krishnaji in assembling kits for practicals (laboratory) and in repairing electronic equipment with him. He had developed trust in me and I could handle the complex equipment such as a multi-gun oscilloscope and a close circuit TV.

During the practical examination, I was asked to do the experiment to determine the *dielectric constant of liquids*. I had myself assembled the equipment but somebody had wrongly scratched HT (for High Tension) and LT (Low Tension) terminals on it. On connecting HT, I realized the blunder and immediately told Krishnaji that I have burnt the valve. Prof. Saligram Bhargava was furious and asked me to go home right in front of the examiner, Prof. D.S. (Daulat Singh) Kothari. Krishnaji insisted that he was well aware of my capability and that this was only an accident and gave me another experiment. When Professor Kothari came to take my *viva voce* examination, he asked some questions which no other student could answer. He continued asking questions for one hour and I was worried that I had missed one experiment and I may not be able to complete the second one. Later, I went to Krishnaji’s residence to tell him that I do not want to fail and wanted to drop the second practical. He advised me not to be stupid and told me that Prof. Kothari was very

happy with my answers. This incident developed into a very personal bond with Krishnaji, as well as with Prof. Kothari for the rest of my life.

During 1949, many of the Intermediate colleges were upgraded to Degree colleges and I had offers to teach in Colleges in several cities in U.P. (Uttar Pradesh): Gorakhpur, Meerut, Rewari, and Khurja. I was quite young (this was before I had turned 20); my father did not want me to go to these places. Finally I got an offer to teach at Saugar University in Madhya Pradesh, without any interview and I accepted it. The University was only 3 year-old and they wanted someone to develop the MSc and BSc laboratories. When I asked Prof. Devidas Raghunath Bhawalkar, Head of the Department, how he selected me without any interview, he told me that Krishnaji had strongly recommended my name assuring them that I was the best candidate for the job the University wanted to get done. This was a major turning point in my life.

In 1951, I received an offer of research fellowship from Professor Kalpathi Ramakrishna (K.R.) Ramanathan, of the Physical Research Laboratory (PRL), Ahmedabad, Gujarat, on a mere fifty rupees per month. I was reluctant to leave a University job and join research at a far off institute, which was still to be established. Again Krishnaji advised me that I would never get a chance to work under a great scientist such as Prof. Ramanathan. He assured me that the PRL had a bright future under Profs. K. R. Ramanathan and Vikram Ambalal Sarabhai. It was a hard task for me to establish very complex equipment there, and I am indebted to the training by Krishnaji that I could, single handedly, establish the first ionospheric observatory at Ahmedabad. When I was invited to be a professor at the Banaras Hindu University (BHU), Krishnaji was keen that I should accept it and return to U.P. Prof. Sarabhai was strongly against my leaving PRL, however; thus, I refused the new offer. After Prof. Sarabhai's death, I did accept the Directorship of the Indian Institute of Geomagnetism, Bombay (now Mumbai). Krishnaji was a member of the Governing Council of the Institute. I was trying to get land for the northern center of the institute at Bhopal, Jaipur, and Varanasi, but Prof. Krishnaji advised me to seek some land in Allahabad, which is the seat of the National Academy of Sciences, India and the

University of Allahabad. Today, Prof. K.S. (Kariamanickam Srinivasa) Krishnan Institute of Geomagnetism is located at Jhusi, near Allahabad; this is mainly due to Krishnaji's suggestion.

Both Profs. Ramanathan and Sarabhai were highly appreciative of the training Krishnaji had given to hundreds of students in the area of Electronics. They told me that if Krishnaji recommends any student, we invite him/her without any hesitation. We have had a number of successful students and engineers in PRL as well as in the Indian Space Research Organization (ISRO), all because of Krishnaji's training and his reputation.

Professor Krishnaji was not only a teacher to his students but was always a great friend. I pay my humble homage and respect to him.

Professor Krishnaji, My Teacher, My Guide, and My Mentor

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I grew up under the guidance of Professor Krishnaji who was my teacher and supervisor at the University of Allahabad. University of Allahabad, a sterling center of learning and wisdom, was established on the pattern of Oxford and Cambridge universities, but unlike the latter two, it was never conceived of as a center of theology. It is true that this *Oxford of the East* has produced numerous illustrious bureaucrats, politicians and poets, but academics remained the pivot of learning. It has produced a thriving scientific community responsible for founding many science institutions in India and abroad. I deem it fit to recall a few stalwarts such as Kariamianickam Srinivasa (K.S.) Krishnan, Megh Nad Saha, Daulat Singh Kothari and Krishnaji.

My association with Krishnaji started in 1952, when I joined the MSc (Physics) classes. His style of teaching always fascinated me. What a grasp on the subject and what acumen he had to perceive the knowledge level of each of his students! I had already decided to be his disciple in the field. As luck would have it, I topped the course and he agreed to my joining a research project under him. Later he graciously enrolled me as his research scholar for the doctorate (DPhil) degree. He was a hard task master and his words reverberate in my mind till this date, ‘*You shall have to earn your degree. It is not going to be gifted*’.

In fact I was his second student, the first being Dr. Prem Swarup. Both of us went through rigors of research. Krishnaji made us slog, but I must also admit that he sweated it out with us. He would be

there taking observations along with us at odd hours. He made both of us set up Klystron power supplies for microwave benches. Many of our experimental results were published in highly acclaimed journals of the day such as the *Physical Review* and that was a rarity and privilege!

Some memories of my research days are still fresh. I remember the day when three prime ministers [two of them future prime ministers] honored us with their presence. They were Pundit Jawahar Lal Nehru, Shri Lal Bahadur Shastri and Mrs. Indira Gandhi. Pundit Jawahar Lal Nehru was especially curious to know how microwave research could be translated into tangible projects for the betterment of the country. Our Lab was a renowned one and it goes to Krishnaji's credit that he could secure the presence of the leaders of the country who recognized the link between research and development.

Throughout my career through many institutions, Krishnaji remained a pillar of support. I have always sought to emulate his teaching style. He combined within him attributes of an encouraging teacher, a rigorous researcher, an enlightened supervisor and last but not the least an extremely good human being. He was almost like a parent to me and my relationship with him grew from strength to strength till the day he left for his heavenly abode.

Professor Krishnaji and His Influence on My Academic Career

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I am pleased to have an opportunity to record my reminiscences of Professor Krishnaji. (From here on, the title of Professor, for Krishnaji, is implicit in the text that follows.) There are very few teachers who create a life-long impression on your mind. Krishnaji was one of them. For me, he was the most respected and best teacher. I joined University of Allahabad in 1952 as an undergraduate student and it was my good fortune to have him as one of my ‘Gurus’ in the very first year of my studies. Right from day one, I became an admirer of his teaching skills and his affection for all of us.

In my post-graduation in Physics, I opted for ‘*Electronics*’ as a special paper, primarily because it was taught by Krishnaji. In addition to Physics, he taught me much more including the ‘teaching methodology’. Besides being an excellent teacher, he was a scientist of international repute. He had formed a strong ‘*Research School of Microwaves*’ at the University of Allahabad, and had developed several new experimental techniques. Although he never wrote a doctoral thesis for himself, many students obtained their doctoral degrees under his able supervision, and later occupied eminent positions in different parts of the World. He inspired me to adopt teaching and research as a profession and to give my best to my students.

During my post graduation, I learned a lot from the research

activities of Krishnaji's group. Right after my MSc examination, this knowledge helped me to successfully face an interview, conducted by the UPSC (Union Public Service Commission) of India. I was selected by the Commission as "Class One" Gazetted Officer. I did join the post, but soon realized that it was not 'my cup of tea'. My desire to become a teacher and researcher became stronger. After a few months, I resigned from my government job, and returned from Calcutta (now Kolkata) to Allahabad to join the University as a Research Scholar.

A few months later, I was accepted as a Faculty Member in the Department of Applied Physics. This department offered a three year MSc (Tech) course in Electronics and in Communication Engineering. During my post graduation in 'pure' Physics, I had only one course (paper) in Electronics. But, now I was expected to teach three courses (papers) dealing with Electronics and Radio Communication. Indeed, a very difficult task for me! It was at this time that Krishnaji, who was in-charge of the Applied Physics, encouraged me to accept the challenge. With the blessings of all my former teachers, I was able to teach quite well, and I was happy that it was appreciated by the students. In the very first year of my teaching, my students did so well in their examinations in my course that the external examiner transmitted this information to Krishnaji. He was kind enough to disclose to me that he had received wonderful comments about my students' performance. It was indeed a very satisfying experience for a novice teacher like me.

I recall that every year after the '*Holi*' festival, our visit to Krishnaji's home was a must and we were always greeted with warmth and affection by him and Mrs. Krishnaji .

After my doctoral degree from the University of Allahabad, under the able guidance of Professor S.N. (Satyendra Nath) Ghosh, who was then the Head of the Department, I moved away not only from the University of Allahabad, but also from the field of 'Electronics'. I joined the Department of Applied Mathematics, at Queen's University, Belfast, Ireland (UK) as a post doctoral research associate. After three years at Belfast, I moved to the National Aeronautics and Space Administration (NASA), Goddard Space Flight Center, USA, where I worked for two years. During these 5 years (3 in Ireland and

2 in USA), I used ‘Quantum Mechanics’ as a tool to study collisions of electrons with atoms and molecules. Although I wanted to return to India, it was difficult to consider teaching Electronics at the University of Allahabad—I was, by now, far away from the field of Electronics.

While I was at NASA, I was offered an Assistant Professorship in Physics, at IIT (Indian Institute of Technology), Bombay (now Mumbai). I understand that this position was given to me not only because of my academic record, but due to my research in the field of atomic collisions. I joined IIT (Bombay), but during this period I, unfortunately, had minimum contact with Krishnaji. After about two years of my stay in Bombay, I received an offer of Professorship from the newly-started Meerut University; I moved to Meerut to be closer to my home in Allahabad. While at Meerut, my interactions with Krishnaji increased again; he was frequently invited to Meerut to conduct examinations or deliver special seminars to our students and faculty. In addition, I would visit him, to pay my respect and seek his guidance, whenever I was in Allahabad, my hometown.

Only after three years of my professorship at Meerut University, Krishnaji proposed my name to become a Fellow of the National Academy of Sciences, India. With my credentials and his blessings, I was elected as a fellow of the Academy in 1972. In 1986, he advised me to seek an election to become the President of the Physics section of the Indian Science Congress Association. Since my tenure of the Presidency of the Indian Society of the Atomic and Molecular Physics had just completed at that time, I agreed to run for the Science Congress position. Krishnaji had not only proposed my name for it, but wrote personal letters to the voting members. I won the election, by a good majority, to become the President of the Physics section of the Science Congress in 1987; I know that it was the influence of Krishnaji over the physics community of India that was responsible for this. In January 1988, I presided over the Physics section at the Platinum Jubilee of the Indian Science Congress, held at Pune, Maharashtra. Earlier, in the same winter, I was offered a professorship at Banaras Hindu University (BHU), Banaras (now Varanasi); I joined BHU in December, 1988, but due to personal family reasons, I had to return to Meerut, only after a brief stay at Varanasi.

In 1991, Krishnaji came to Meerut, for 3 days, to participate in the annual convention of the National Academy of Sciences. These 3 days gave me an opportunity to discover a different personality that he had now; he was now an active member of the Meditation School of Shri Maharishi Mahesh Yogi. He was now spending a good deal of his time at Maharishi's Ashram, but his love for research in physics was still with him. He was carrying out research on Vedic Sciences and had students working on topics related to them.

Although I don't remember meeting Krishnaji after 1991, yet my attachment and respect for him had never decreased. One morning in August of 1997, I heard that he has gone to his heavenly abode. It was a shocking news to me as well as to all his admirers. Although he is no more with us, his teachings will always be in our hearts. The research school he had started at the University of Allahabad now resides in a large number of cities in India and abroad, i.e., wherever his students or his students' students are located. His message to us was simple: *be a good human being, and serve your society with all humility*. This message will continue to inspire us forever.

A Humble Student's Homage to Professor Krishnaji: Some Cherished Memories

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How do I write a short memoir about a man like Professor Krishnaji who had played many key roles in shaping my life? What do I write? No words can describe him completely. He was a real “*Guru*” with immense compassion and great competence. Many of us, who were a part of his research group, never thought of him merely as their research supervisor or a great teacher but we proudly considered ourselves as a part of his “family”. That is why many of us address him as *Dada* (a common word by which the elder brother of the family is addressed in Allahabad) and the real younger brothers of Professor Krishnaji addressed him the same way. In what follows, I will address him as Krishnaji, or Dada, leaving the title aside. He was a friend, a philosopher, a guide, a role model and an enlightened torch bearer to all his students. He was a true embodiment of all that is good in life. I have no intention of highlighting his academic achievements and how he established the first Microwave Research Laboratory in India entirely on his own with meager resources. I have also no desire to bring back the nostalgic memories of the days when he dominated and actively participated in creating a vibrant academic ethos at Allahabad University. Krishnaji is a man of history as he ruled many hearts through his selfless deeds. The greatness of Krishnaji laid in nurturing the youngsters, who came in his contact, and motivating them to overcome the difficulties smilingly and ungrudgingly, a hallmark of his character. So, what I write below are only a very few of my sweet memories of my personal contact with

that great man over a period of nearly forty years. Similar stories are shared by many of his students.

My faint and first indirect association with Krishnaji started when I joined BSc in Allahabad University as a young fifteen year old boy in 1953. I, as a young entrant in the University, heard stories about this respected teacher with great reverence as narrated by our seniors. The message was loud and clear that he was the person to approach in case of personal difficulties even if you do not know him personally. It was afloat that every young person, the moment he introduces himself as a student in difficulty, can be sure of getting a patient and sympathetic hearing from him. Many of my friends did approach him with a variety of apparently mundane problems like no place to stay, no money to pay fee, need for a tuition or a part time work to partially support studies, fee-waiver, monetary/health problems of their family, and rough (or unfair) treatment on the part of the University Administration. He solved or resolved the problems of most of the students. And if not, he used to inculcate enough strength in the young minds to be able to face the problems boldly. It was a great solace to know that there was some God like “*Guru*” to take care of young students in need. His doors were always open. My turn came much later when I really entered through these doors and peeped into his citadel of nobility.

I came in close contact with Krishnaji in 1956 when I joined his MSc (Final) Class with specialization in *Electronics*. I was mesmerized by his style of delivering the lectures. I was so impressed that I took a resolve to become a part of his “research group/family” after passing my MSc. I still cherish the memory of his soft steps with which he used to walk in our “Practical Laboratory Class” to attend to our difficulties. A hush of wave of reverence would appear to have passed by as he entered the room. He would sit on a stool and attend to our difficulties. He immediately used to know the “problem and the solution” but never told us directly. Instead, he would “guide us to uncover” the problem ourselves and to feel the satisfaction of having done so. He was the real “Solver” but the “Learner” was given the privilege to have the illusion of having solved the problem. That

was his greatness and that was his uncanny way to teach the method of analyzing the ticklish technical problems (the same method he applied whenever we approached him with our personal or family problems). During one of his laboratory visits, I had the “scare” of my student’s life by making a silly careless act. Krishnaji was attending to a problem of my friend working next to my table. In those days, most of the Electronics experiments were performed using Vacuum Tubes/Valves (not transistors or Integrated Circuits). I carelessly pulled out a valve which flew out of my hands onto the floor and broke with a bang. I was scared to death because getting replacement of any component was difficult in those days in India. But this great teacher did not even turn his head towards me (what to say of scolding) and kept on attending to the problems of my friend. After some time, he called the laboratory attendant to bring a replacement valve for me. Then he came to me and quietly taught the correct way of pulling out the valve and putting it back. Subsequently, he walked away quietly, as if nothing had happened, leaving in us a more deeply engraved reverence and awe for him.

June of 1957 was the time when, I think, I was really groomed into the *Gurukul* (teacher’s family) of this great teacher, Krishnaji. I went to his house after having passed my MSc and expressed my desire to join research under his supervision. His personality was such that I unhesitatingly narrated the other part of my story also, which was concerned with the pressures through which I was undergoing in the family. I was being persuaded to try to join the Indian Administrative Service (IAS) which was achievable with my academic credentials. All the well wishers and the family members were unanimous on this except my father (a civil servant himself) who thought that I will not enjoy Administrative Services and Academics would be best for me. As a great teacher, he listened to me patiently and explained (without bias/prejudice) the good and the bad points of both the Administrative and Academic lives. He asked me to go home and come after 2-3 days after giving due thought. Those 2-3 days helped me to decide unambiguously that my future career would be Academics (and I am glad even after 50 years that I

took that decision). I did not realize at that time that my “grooming” into this great teacher’s family had already begun. Decision making was always easy for me later in life under the watchful guidance of the great Guru.

After finalizing the decision, with the consent of Krishnaji, that I would work for my PhD under his supervision, I successfully applied for a CSIR (Council of Scientific and Industrial Research, Government of India) scholarship which will pay me 315 Rupees per month because, as a rule, some incentive increments in the salary was given to students who had a First Class academic record throughout their career. There was also almost a certain chance that I would be appointed a temporary Lecturer in the University which will pay me 300 Rupees per month. Becoming Lecturer at Allahabad University was prestigious. How to decide? Simple! Ask Professor Krishnaji. I followed his advice to become a Research Assistant for the initial first year to concentrate on research full time and then to take my chance to join as a Lecturer next year to gain concurrent teaching experience. When I reflect back, I see that this single decision had shaped me into what I am today. Krishnaji, through some magical method, never let me feel the pressure of doing almost two full time jobs of teaching from 9 A.M. to 4 P.M. and later upto 10 or 11 P.M. to struggle with my PhD research. In 1962, some turbulence started setting into my life. I got married and also completed my PhD. Hidden pulls and pressures were building up arising out of conflicting demands of my academic pursuit and family’s expectations. There were pressures within pressures because of the changed scenario in my family. But for me and my wife Usha, Krishnaji was always there to guide us. He stood like a rock to guard our future and welfare. He took the role of elder family man. This was Krishnaji—a complete benefactor.

Krishnaji treated all his students equally and everybody was sure of getting their due from him. He imbibed in all his students a feeling that they were members of a big family and should behave the same way. Each senior was to be treated as elder brother and vice versa.

Even today, after he is gone, we keep that tradition. That is why my younger colleagues of those days (Professors Abhai Mansingh, Shyam Lal Srivastava, Vinod Prakash, Pradip Kumar, Vinai Krishna Agrawal, Vinod Kumar Agrawal and many more, irrespective of the high professional positions they hold and having past their *sixties* in age, still address me as Bhai Saheb (elder brother) and my wife as Bhabhi (elder brother's wife). I, on my part, also can never think of disrespecting my seniors Dr. Prem Swarup, Prof. Ganesh Prasad Srivastava and Dr. Shankar Swarup. Though, currently we have fewer occasions to meet each other, but the in-built confidence of having their support and affection is ever present in me. Krishnaji was not Head of a research group but he was Head of a *Guru-Pariwar* (a teacher's close knit family).

I cannot desist myself from narrating two of my personal experiences to illustrate the manner in which Krishnaji used to guide his students into newer career options which the particular student, in his evaluation, deserved. One fine morning, in early 1964, I saw on my table an Application Form for a Faculty position in Gorakhpur University. Since I had never asked for it, I thought it might be for another young co-worker who had the same name as mine and was looking for a job. When I went to pass the form onto him, I was told that Krishnaji had specially procured that for me (he had even paid for the cost of the form). This disturbed me a lot. Had I done something wrong to anger him and he wants me to leave his laboratory? What could be more frustrating than being discarded by your own mentor and role model? I had a sleepless night. In despair, I had no other place to go for help other than Krishnaji himself even though he was indirectly connected to my coming to that disturbed state of mind. That speaks of the degree of faith which we had in him. What I heard from him was a further revelation of his great personality and his relentless concern about the welfare of his students. He told in confidence that he had some plans to move out of Allahabad and he did not want any of his students to face rough weather after he leaves. Further, he told me that he considers me to have acquired enough training/competence to establish myself independently. Further he

thought that this change over to Gorakhpur will also relieve me of the family pressures through which I was undergoing at that moment. He explained to me that it was a senior Faculty position (Reader, the first Reader to be appointed in Gorakhpur University's Physics Department) and that it will give me more salary and academic prestige. I told him that the position of Reader generally goes to very senior persons above the age of forty years or so and I am only 26 years of age and as such, I stand very high chance of being rejected. Therefore, I insisted upon staying with him in Allahabad University as long as possible and would not apply to Gorakhpur University. He disagreed and then gave the dictum, "*It is cozy and comfortable under the shades of a big banyan tree, but no plant grows big under its shadows. The plant has to be transplanted to a new ground. And so, I have to move to be able to grow to the heights of his expectations*". What greatness!! Amazing was this man! As directed by him, I applied and succeeded. That changed my life. Looking back, I now realize that he had done similar things to my seniors and had shifted all his early students to newer environments where they all flourished.

Again, in early 1972, I was in a similar dilemma. I, out of the blue, received an appointment letter from Ravishankar University, Raipur, offering me the post of full Professor and Head of the Department. I was just 33 years old. Professors in India in those days used to be very senior scientists above the age of 50 years or so. It appeared to me and my friends that this letter is not true and it must be some sort of a joke since I had not even applied for the post. How to find the solution of this situation? Simple! Approach Krishnaji. I later learnt that the watchful eyes of some senior Professors of the country (including him) thought me fit for that post and had made the necessary *confidential* recommendations to Ravishankar University. To illustrate the clarity and concern with which he used to guide his students, I quote a few words from the letter of Krishnaji in response to my letter asking for his advice whether to join Ravishankar University or not. The letter said, "Your appointment as Professor and Head of the Department will be a short term drag on your personal research but it will be a *challenge* to establish a good

Department. I hope that you will accept the challenge.” That letter said everything. Almost under similar situations, after seven years in 1979, I was guided by him to move to Banaras Hindu University as Professor of Physics which is the biggest University of the country where I still continue to work as Platinum Jubilee Senior Scientist of the National Academy of Sciences, India. These stories should not give an impression that he was helping people, left and right, to grow with no accountability. He was no push-over. He always kept an Eagle’s watch to check whether the students from his research family were growing in the right direction or not. If not, they were reprimanded in no uncertain terms. For example, in my case of joining Ravishankar University, I was clearly told that he would like me to return back to Gorakhpur University if I failed to deliver the goods. In fact, after two years of my stay in Ravishankar University, he went personally to see whether I had come to his expectations or not. I was glad, I did not disappoint him.

Krishnaji’s concern about his students was total including them and their families. The illness or personal difficulties of his students were equally important to him. I recall a story of my friend and a class fellow (Late) Professor Baikunth Nath Misra who developed Diabetes at an early age of less than 30 years. He would not listen to any one of us, his colleagues and friends, and he was not prepared to go to the Physician on one pretext or the other. In desperation, we reported the matter to Krishnaji. He immediately got into action, fixed an appointment with a Physician, directed Baikunth Nath Mishra to accompany two of us to the doctor and also made us responsible to see that he regularly gets the proper medical treatment. Subsequently, our friend lived a full life beyond *sixties* and became a respected Professor of Physics at Allahabad University.

Krishnaji always kept track of the welfare of his students’ families and would attend to their problems the moment these were brought to his attention. Wives of many of his students’ families talked of their problems freely with him and his wife (respected Bhabhiji). If at anytime, any of his students were found to have wronged, they were affectionately reprimanded and every one of us listened to him

in all humility. The children in the family of his students generally knew a lot about him through appreciative stories being talked about him in the family. The children were very free with him because they knew of the immense love he had for them. He would not hesitate to go even out of his way to keep the due wishes of the children. Once we went to Aurangabad for the Annual Meeting of the National Academy of Sciences, India. My youngest son Amreesh (Rishu), then, nearly 15 years old, wanted to see the World Heritage site of Ajanta Caves, but logistics to go there were not fitting very well. My son knew of the last resort in situations like this and approached Professor Krishnaji. He had high blood pressure and was not fully fit to take the arduous journey, but how Krishnaji could disappoint a young child of the family. Not only did he make all the arrangements, but he also accompanied us. Such was his “attachment” which made him dear to all. That was just another facet of Krishnaji’s nobility and simplicity.

The leading torch of Professor Krishnaji guided his students’ lives in totality. There are so many stories to tell and memories to cherish that I generally feel happier in not narrating them and keeping them hidden in my heart. That living embodiment of compassion, competence and passion is no more with us, but his legacy will go on and on through his students, grand students, great grand students, and their gratified families. I salute him.

Professor Krishnaji – A True Teacher who was Always There to Help Students

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Professor Krishnaji inspired all the students who came in his contact. (For simplicity I shall refer to him as ‘Krishnaji’ in what follows.) The students who regarded him as their teacher are not only those whom he taught in BSc or MSc or whose research he supervised for DPhil degrees, but even the students of other Universities whom he helped in research, and surprisingly even those whom he just examined in MSc (Practicals) acknowledge him with respect as their teacher. I have met several such students (now teachers), claiming to be students of Krishnaji, now at different Colleges /Universities in India. I asked them how they were his students. A typical reply was “*actually Prof. Krishnaji was my examiner, but during a brief period of my MSc practical examination, he taught me how to make correct electronic circuits and created confidence in me that I could learn Electronics, which none of my regular teachers could ever do*”.

I still remember that in my batch (1959) of MSc (Electronics), all the students of the class from the front benchers (top 5%) to the back benchers (bottom 5%) felt that Krishnaji liked them the most. Probably this reflects the fact that he helped and cared for students as human beings irrespective of their academic rank in the class. I may add here one advice Krishnaji gave me when I was going to deliver my first Lecture at Allahabad University. I asked him what I should do to become a good teacher. He said “*You can be an excellent ‘subject teacher’ by getting the concepts clear yourself and making them understandable to the students in the class, but to become a*

good teacher you have to make students feel that you are there to help them in all their academic and personal problems; 'subject teaching' is just a part of the job of a teacher." I have always tried to follow this in my teaching career at Queen's University, Kingston, Canada, and in my almost 30 years of teaching at the University of Delhi. How far I have been able to emulate my teacher, only my students can tell. However, I have often said at public meetings in different colleges, during my 5 year administrative tenure at Delhi University, that the problems faced by the present generation of students in Indian Universities, to a great extent, arises from the approach of persons who have gone into the teaching profession. Earlier generation (when we were students) were taught by teachers, now the present generation of students is being taught by Lecturers, Readers and Professors, many of them have failed to imbibe all the qualities of a teacher. I strongly believe the advice of Krishnaji to me is valid for generations to come.

A person himself may be an extremely good research scholar or a knowledgeable person in a specialized subject, and develop a good research group and publish papers, but it is not easy to train research students who in due course of time establish their own research groups at different places. Krishnaji had the exceptional ability of providing this training and is indeed the leader who has spread *Electronics* teaching in North India and Research on *Microwaves and Dielectrics* all over India. Dr. Prem Swarup, the first PhD student of Professor Krishnaji, has been instrumental in the development of the solid state microwave devices in Solid-state Physics Laboratory of the Ministry of Defense, Government of India. The passion for microwave developed during his PhD work continues in him; after retirement, he is still associated with teaching '*microwaves*' to Engineering Students at Indra Prastha University, Delhi. Professor Ganesh Prasad (G.P.) Srivastava, Krishnaji's second student, had put the teaching of Electronics in Physics at Delhi University to a highly respectable level, and had established a large Microwave Research group there. He has the distinction of starting Electronics as a discipline separate from Physics and was the first Head of the Department of Electronic Science at the South Campus of the Delhi University. Several other students of Krishnaji have similar credentials.

Krishnaji was a close friend of my maternal uncle (*Mama*, in Hindi) Professor Yadupati Sahai (the youngest brother of the great Urdu poet Raghupati Sahai ‘Firaq Gorakhpuri’). Krishnaji used to visit his residence at 8 Bank (now Ram Narain Lal) Road close to where he himself lived (at 14 B Bank Road). When I joined BSc, my *Mama* told me that I should meet Krishnaji. I had heard from my peers that he is considered one of the top teachers in Physics and has established a very good research laboratory in Electronics (no one in BSc classes knew the exact area). I told my *Mama* that you know my cousins who joined BSc (Physics, Chemistry & Mathematics) and that my family has the unique distinction that no one has been able to ever pass the BSc examination. They changed subjects to become a graduate in another field, and went to join the Indian Army. I said “I think it will be better if I meet Professor Krishnaji after I have passed BSc, otherwise it will be embarrassing for you to have introduced your nephew who has carried the tradition of his family.” I did not meet Krishnaji at that time. Well I was able to break the tradition of my family: I passed the BSc Exam., joined MSc (Physics) in the 1957-1958 session and met Professor Krishnaji for the first time at the residence of my *Mama* sometime during 1957-1958. He did not teach me any course up to MSc (Previous), but in my MSc (Final), I opted for *Electronics* as a special paper and then came in close contact with him as a ‘subject teacher’. His approach of training students in the Electronics Laboratory was unique (at least in the Indian context). He never liked any one coming and telling him that a particular circuit or equipment is not working. He always insisted that we should tell which component of a circuit or unit of equipment is not working. This gave us the confidence to open the inside of an equipment and check it without fear of damaging the equipment. Such a training can be given by a teacher who himself knows how the stuff works and has the magnanimity to understand that even if something is damaged, it should be taken as a part of the learning process rather than shouting at the student (or blaming the student) as some did. I found this quality lacking in majority of experimental physicists of my generation and, I believe that Krishnaji’s approach is necessary to establish an experimental research laboratory in India. This may be the secret why almost all PhD students of Krishnaji have been able to establish

an experimental research laboratory and group in whichever University they have joined as faculty.

As I have mentioned earlier, I was also one of them who thought Krishnaji liked me the most; I have every reason to believe it as is evident by the following narration.

The first special personal favor Krishnaji gave me was in January of 1959. I had a severe attack of asthma/bronchitis in the second half of 1958. (Actually it could not be properly diagnosed at that time; it was discovered only after my retirement that it was due to some weak heart muscles from my childhood). I had to stay at my home at Fatehpur, in UP; thus, I missed lectures and laboratory and was unable to put in hard work and needed special food which was not possible in the hostel I lived. I met Krishnaji at his residence to tell him that I wanted to ‘drop out’ of the classes that year, and would appear in the final examination only the following year. His attitude changed and it appeared he was not talking to a student but to a family member and asked me what I want to do after MSc. I said I want to do research under you. However, since all your PhD students have first division and I cannot get first division if I appear this year, and thus, I will not be able to join research in your group. He said “You have above 60% in the MSc (Previous) and if you even start studying without exerting yourself, you will at least get pass marks and so overall you will pass with a second division. There is no guarantee that you will not get sick next year as there may not be a permanent cure of your ailment. I can assure you that even if you get a second division, I will accept you in my research group”. I was greatly moved by this gesture and I was reminded of some such gesture of my father. I am told that I had some problem as a child in my foot and I could not walk up to the age of three or four years; at that time, my father felt that he should do something for his sickly (invalid) child and, thus, he got a house built exclusively for me, so that I could survive economically by the rent (it would fetch me), if I would be unable to get over my sickness.

Professor Krishnaji had become more like a father- figure for me and a part of my family on my own, not because he was a friend of my *Mama*. Well I did appear in the examination of 1959 and, as

expected, I obtained a second division. Krishnaji kept his word and enrolled me for PhD in 1960. Someone very close to Krishnaji and his family with far superior academic record than mine had to ‘suffer’ because a teacher wanted to help a weak sickly student. I may add that the one who had ‘suffered’, but later joined research under Krishnaji, is now a close family friend of mine. This incident reflects the human values a student develops in his association with Krishnaji.

It was made clear to me that I will not get any stipend during research, so I had joined, to teach, CMP (Chaudhary Mahadeo Prasad) Degree College immediately after MSc in July 1959, and continued there even after getting enrolled for PhD in 1960. I was busy working in the college during the day and was working in the laboratory in the evenings and holidays; thus, my interaction for research problems with Krishnaji was not possible during the day time, but he had given me the liberty to come to his residence whenever I had any problems, in the late evenings and holidays. As expected, I always had problems and my frequent visits to his residence sometimes extended to dinner time. (I am thankful to the Late Mrs. Krihnaji (Shrimati Bimla) for offering dinner whenever I got late. She knew I will not get anything that late in the hostel.) Around 1960-1961, Professor H.C. (Harish Chandra) Khare returned from Canada; he belonged to my home town Fatehpur, and was just like a brother to me; he was also very close to Krishnaji. Dr. Khare’s presence further cemented my relationship with Krishnaji and his family, and I developed very close relationship with the entire family. This is reflected in a photograph taken in January 1965 when the entire immediate family of Krishnaji and one of his sisters-in law came to Fatehpur at the reception of my marriage with Kalpana, daughter of Professor Hari Shankar Srivastava (then Professor of History at the Gorakhpur University). (See Part C, Figure 4, p. 163.)

I am not going to write about the impact of research papers I published under Krishnaji and how the research field of “*Microwave Studies of Dielectrics*” spread in India, but only one incident that reflects Krishnaji’s international research status. When I was writing my doctoral thesis in the second half of 1964, my elder brother Professor Ajai Mansingh was a Post Doctoral Research Fellow in the Department of Biology, Queen’s University, Kingston, Canada.

He wanted me to come there for my post doctoral work but I was not very keen and did not approach anyone. My brother went to the Physics Department to find opportunities for me. He met Professor D.B. (David Boyd) McLay and told him that I was finishing my PhD in Physics at the University of Allahabad, and then enquired if there were any openings for me. Professor McLay asked him: Is your brother, by any chance, a student of Professor Krishnaji? My brother said “Yes, but I do not know the exact work he is doing”. Professor McLay said “If he is a student of Prof. Krishnaji, then I am sure that he will be able to obtain Post Doctoral Fellowship of the National Research Council (NRC) of Canada”. He noted that Dr. C.C. Costain was Head of the Microwave Spectroscopy, and Dr. Gerhard Herzberg was Head of the Spectroscopy Group at NRC, and, Dr. Costain had personally visited the research laboratory of Krishnaji a couple of years back. He told my brother that both he and Herzberg have a very high opinion of the work of Professor Krishnaji. Professor McLay sent me the forms and I did get the NRC Fellowship to work at the Queen’s University. A person commanding such a great respect from persons like Dr. Herzberg, who was awarded the 1971 Nobel Prize in Chemistry, speaks a lot about the quality of the laboratory and the research developed by Krishnaji probably without visiting any University abroad. My association with Krishnaji did not end after my going to Canada in 1965 as a NRC Post Doctorate Fellow and later as an Assistant Professor of Physics at Queen’s University in Canada. We were always in touch and I visited him and his family whenever I came to India during my stay in Canada.

After the death of my father in 1969, I decided to return to India as I had promised my father that I will not settle abroad. Again, Krishnaji was instrumental in getting me a Reader’s position at the University of Delhi in 1972. Professor Ganesh Prasad (G.P.) Srivastava was already there; he did not have much personal contact with me as we had never overlapped during research but he helped me a lot since Krishnaji had requested him to do so. The greatness of a teacher in ‘how to project a student’ can be given with one example. The “*Microwave Dielectric Studies in Liquids*” had spread at various research centers in India and those involved approached Krishnaji for help whenever they had any difficulty. He started telling all those who came to him for help to contact me at Delhi as I was now more

exposed to the general area of *Dielectrics*. This way my name became known to many groups working on *Dielectrics* in the country, which finally culminated into starting a “National Seminar on Ferroelectrics and Dielectrics (NSFD) in 1980. It is being held once in two years. Krishnaji was honored in NSFD VII, held at the University at Srinagar, Garwal, in 1992, for his immense contribution in the development of research activities in the field of *Dielectrics* all over India (see Part D, p. 231, for the Seventieth birthday celebration of Professor Krishnaji).

Since our stay in Delhi and Krishnaji’s association with Maharishi Mahesh Yogi and his stay in Maharishi’s Ashram at Noida (Uttar Pradesh) increased the family visits and my daughter Smita and son Suhas started respecting and treating Krishnaji (and his family) as their own family members. In a way, this has turned out to be a reality because my daughter-in-law Meenal is niece of Avinash, husband of Ila. (Ila is the youngest daughter of Gopalji, Krishnaji’s younger brother.)

I add here a few words about Delhi University to write about Krishnaji’s association with this University. The President of India is also Head (Visitor) of the Delhi University (DU). Out of the three important committees, Academic Council (AC), Executive Council (EC) and the University Court, EC is the highest administrative body. The Vice Chancellor and three in the rank of Pro-Vice-chancellor (PVC), Dean of Colleges and Director of the South Campus of DU are members of all the 3 committees. The EC has two elected teachers’ representatives and three elected members from the Court. The Court has wider representation and includes eminent persons from different walks of life. The two most important members in EC are eminent persons nominated by the Visitor for a period of three years; they are called Visitor’s Nominees. The Visitor’s Nominees have to ensure that the University ordinances are properly followed and the University Administration does not take arbitrary decisions. Krishnaji was one of the Visitor’s (President of India) Nominees in the EC of DU (1985-1988). He was earlier Pro-VC of the University of Allahabad. The benefit of his own experience of problems in the University administration in general and functioning of Delhi University, in particular by virtue of being a EC member, was fully utilized by me when I took up the administrative position as Director

of the South Campus of DU (1995-2000) straight from my research laboratory. I was not associated with any of the top committees of DU earlier and had not paid much attention to the functioning of the University. The guidance of Krishnaji helped me in successfully completing my tenure. Unfortunately, he died a few months before my term as Director of the South Campus ended. I could not attend his funeral at Allahabad. However, the DU had convened a condolence meeting for Krishnaji because of his association with the highest body of DU, and because of the highest respect the teaching community had for him.

I mention here a few things about Krishnaji's tenure as Visitor's (President's) Nominee in the EC of Delhi University. Elected representatives of the teachers bring problems to the above-mentioned committees which need interpretation of some of the ordinances; further, changes in the ordinance may be required when the problems become complicated because the elected teachers are often associated with political parties, as is the case at Delhi University. These problems are usually entrusted to a subcommittee of EC to examine and advice. During his tenure as EC member, Professor Krishnaji was the unanimous choice to head almost all the sub-committees of the EC to recommend the interpretation of ordinances or their modification. The merit promotion of teachers was introduced a couple of years earlier (in 1983) before the nomination of Professor Krishnaji. There were many disputes of teachers regarding, e.g., their eligibility and salary fixation. Since the merit promotion in Central Universities was introduced after prolonged strikes by teachers, this had made Delhi University Teachers Association very upbeat; thus, any recommendation of the sub-committee which was not convincing could lead to agitation. The term of Visitor's nominee is for three years and is not repeated. The administrative acumen and just decisions by Krishnaji impressed the University Teachers so much that they wanted that all the pending cases to be decided by him, and they requested him to contest election to the University EC, this time from the University Court. There was such an overwhelming request that he agreed to contest the election. This was the first case in the history of Delhi University that a Visitor's (President's) Nominee who had no base in the University became so popular that he received the maximum number of votes amongst all the candidates and was elected member of EC for another two years. Unfortunately this

quality of Krishnaji was not fully exploited at the University of Allahabad.

In recognition of my admiration and respect for Krishnaji, I have established an endowment at the National Academy of Science, India (NASI) for “*Professor Krishnaji Memorial Lecture in Experimental Physics*”. I can never repay what Professor Krishnaji has done for me. I have attempted my best to give my students what I received from him (my teacher). If some research students of mine have been benefited with my association as I have been by my association with Professor Krishnaji that will be my greatest tribute to my *teacher*.

Prof. Krishnaji: A True Mentor of Experimental Physics

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Sri Krishnaji was known to us since 1949, when we moved from our ancestral home in Kydganj to a newly constructed house at 28 Thornhill Road (now known as Dayanand Marg) at Allahabad. His family was living in a house across the road (3 Kanpur Road, now Shri Purushottam Das Tandon Road). His younger sister, Malati ji, was a classmate of my elder sister, Madhuri, both completing their MA degrees in Hindi from Allahabad University in 1952. His younger brother, Govindjee, a friend of my elder brother, Amarnath, frequently came in the evening to play badminton or cricket or any other sport activity we endeavored to create.

In 1955, I joined BSc with Physics, Mathematics and Chemistry as subjects. Continuing the education process, I completed my MSc in Physics in 1959. It was during my MSc final year (1958-1959) that I came in contact with Prof. Krishnaji, on a regular basis. The confidence he provided me, in the field of experimental physics, is the basis of my achievement in all aspects of experimental physics. He, in a very simple but focused manner, used to teach simple tricks that one must know to be successful in a laboratory. For example, he taught us how to connect the electric wire in a circuit correctly. He simply said that the screw to which the wire needs to be connected is always tightened clockwise, hence bend and create a loop of the wire also clockwise so that when you are tightening the screw, the wire would remain rigidly connected along with thread of the screw. He also taught us how to solder the wires properly. These little tricks always stayed with us and imparted enormous confidence to succeed in our lives.

After MSc in 1959, Krishnaji encouraged us to go abroad, particularly to USA. In those days, there were no entrance examinations and admission in the US universities was done on the basis of recommendation letters and grades. With the key recommendation letters from Prof. Krishnaji, three of the first five top position holders in the batch of 1959, were admitted in the Physics Departments of Harvard (Bhupendra Mathur), Yale (Gyanendra Tandon) and Columbia (Rameshwar Bhargava, the author). These three universities were considered among the top ten universities in the world. The training in MSc classes helped us to continue doctoral degrees without any difficulty. At Columbia University in 1960, nine out of twenty professors were Nobel laureates (before or after 1960). To face these giants of Physics and not to get intimidated was exactly the motivation Professors Krishnaji and Rajendra Singh had provided us.

In my visits back home at Allahabad, I always made sure that I met Prof. Krishnaji. He remained very keen in finding what I was doing in science and technology. In fact, it was always a long conversation because he was truly a scientist with intense curiosity. In my last visit, shortly before his death, I visited him only with an intention of paying my respects, but not to disturb him otherwise. His wife and family said that he should not be disturbed. Once he came to know that I want to see him, he summoned me immediately and sat upright to talk with me. He kept asking all sorts of different questions about Nanotechnology (the field I have been pursuing since 1990). I wish there would be more people in science who care about its value to humanity.

I end this very brief Tribute by showing my respect to Prof. Krishnaji with a statement made by Prof. I. I. Rabi (Nobel Prize winner, Founder of Columbia Radiation Lab. and mentor to 10 Nobel Laureates). Prof. Rabi was asked: what is your religion? He said “*Good experimental physics brought him nearer to God*” “*and good physics was walking the path of God*”. Rabi was reiterating his passion for finding truth through experimental physics. That is what Prof.

Krishnaji did most of his life in the most difficult circumstances that existed in India.

A photograph of the MSc class of 1959, which includes the key members of the Physics staff at Allahabad University, is shown in Part C of this book (see Figure 2, p. 162).

Professor Krishnaji, My Teacher

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I have been very fortunate to be a student of Professor Krishnaji and feel honored to write about him. Krishnaji was not only a good teacher, but he was an excellent research guide. In addition, he was a physicist whose scientific concepts were so clear that I have not met anyone in or outside India who could be compared to him. He, by his example and teaching, made me understand physical principles and concepts clearly. His qualities as a teacher will be discussed later in this *tribute*. Also, Krishnaji was a very good man who loved his students, was always ready to help them and was very accessible to them. I felt that I could discuss with him any problem of my life anytime I wanted.

In 1953, after passing my Intermediate Exam from the Railway Inter College, in Tundla, Uttar Pradesh, I along with other two students were asked by our Principal to study at the Allahabad University, in Allahabad. My father was an Assistant Station Master in the Indian railways and was stationed at Tundla then. He was reluctant to send me to Allahabad, but my *vidushi* mother convinced him to permit me to go there. It brought some hard financial condition in the family, but my grandfather (Baba ji) and other relatives helped us. So in July of 1953, I went to Allahabad University. Allahabad was the largest city I had ever lived in until then. We had no electricity in our homes in Tundla. In Railways, only English, other Europeans and Anglo Indians were in the higher administration and enjoyed the comforts of running water and electricity. In fact, Tundla being an important junction had only Europeans or Anglo-Indian Station Masters until early 1950s.

In my first year of BSc, I was a student of Physics, Chemistry and Mathematics. There were four sections of the BSc Class. In

Physics, my lecturer of Electricity and Magnetism was an ordinary teacher and could not explain the subject properly. One of my classmates from Tundla, Banwari Lal Sharma (now retired Professor of Mathematics, University of Allahabad), had Krishnaji in his section and he recommended me to sit in his class. So, I tried to attend Krishnaji's lectures whenever I could and took notes. That was a large class and he probably did not know that I was an unauthorized student sitting in his class. Fortunately, in the second year Professor Krishnaji was teaching us in our tutorials and he was also our teacher of practical (laboratory) classes in Physics. This is where I saw his teaching skills and his gentle behavior towards his students. He was really good in experiments and would often fix the instruments right before our eyes. He would explain the theory also very lucidly and clearly. In the Physics final exams, I had scored over 70% marks and I believe that Krishnaji's teaching and guidance was responsible for this achievement. During this time, I had visited even his home, along with other students, a few times for assistance. Krishnaji expected high standard from his students and encouraged them to achieve it. He was not overgenerous with marks and this made students to work hard.

In July of 1955, I joined MSc (Physics) at Allahabad University. At that time, Krishnaji was also in-charge of the newly opened J.K. (Juggilal Kamlat) Institute of Applied Physics and he encouraged me to join the three year course of MSc (Tech). Some physics professors were advising me against it and even my father was not too eager as it meant one more year at the University. But I joined MSc (Tech) course; we were 12 first class BSc students studying Electronics and Communication there in the first batch. Dr. Prem Swarup was the first faculty to be appointed at the institute. He was Professor Krishnaji's first PhD student. We all were thinking that Professor Krishnaji will become the Head of the J.K Institute, but the University of Allahabad, instead, appointed Dr. Satyendra Nath Ghosh who was in USA at that time. Since Krishnaji did not have a PhD degree, we were told that he could not get that position. We knew that although Krishnaji did not have a PhD degree, he had already guided students who had obtained PhD degrees. Although Professor Ghosh had a PhD, he was not specialized in Electronics,

and had not guided research students; he was more of a theoretical scientist than an experimental one. The University Administration had ignored all this. However, Krishnaji took it in good spirit and always praised Ghosh Sahib (as he was called) in front of us. As mentioned above, Ghosh Sahib was not an expert in Electronics and this was clear to us, the students, from his teaching. The calamity of all this was that out of 12 students, only five students passed after three years in the first batch. Four had failed in the first year. Three left, one was selected in Indian Administrative Service (IAS), one was selected in the Bank Management Services and the other I believe became a college teacher.

During these three years, we depended on Krishnaji. His greatness became clear that when Dr. Ghosh, after one year stay at Allahabad, went back to USA, Professor Krishnaji filled the vacuum very efficiently. We, the students, were very happy to have him back in the J.K. Institute. Because of his teaching, I believe I obtained a first division in my MSc (Tech). Justice Desai's son Rajni Kant Desai topped the class. Although I was second until the second year, Mr. Mohan Singh Bisht overtook the second position in the final third year Exam. Thus, I got the third position. Desai won a scholarship to do his PhD at McGill University, Montreal, Canada, Bisht was appointed in the J.K. Institute as a lecturer and I was awarded Council of Scientific and Industrial Research (CSIR) scholarship to do PhD.

I was fortunate to be accepted by Professor Krishnaji as his 5th PhD Student. Dr. Prem Swarup was his 1st student, Dr. Ganesh Prasad Srivastava the 2nd, Dr. Shankar Swarup the 3rd, Dr. Suresh Chandra the 4th, and I was the fifth student. I was asked to work on the microwave properties of *ferrites*. I was to make *ferrite* and then study its properties. There were few Electronics students at that time in India and even fewer who had obtained 1st division marks. So I was called for several interviews for jobs. Krishnaji never discouraged me to apply at other places and even abroad.

Since Rajni Kant Desai had gone to McGill University, Montreal, as mentioned above, on a World University Scholarship of Canada, I was familiar with that University. Allahabad had two English daily Newspapers then, namely *Amrit Bazar Patrika* and the *Leader*. I saw an advertisement in Amrit Bazar Patrika and thought that the

scholarship was to be awarded to a student from the J.K. Institute, so I applied. However, when I went to deliver my application to the English Department, which was the northern centre of the World University Scholarship, the clerk told me that it was to be awarded in any science or engineering subject to a student in the whole of India. I was shocked and wanted to withdraw my application. But the clerk said, “*babu ji ab le aye hein to de diijiye; jab uparwala deta hai to chhappar faad ke deta hai*” meaning, “Sir, now since you have brought it so submit it, just give it to me; when God gives, he gives it by tearing the roof of a hut.” So I submitted the application but had no hope of ever winning the scholarship. I had forgotten about it all together. This was sometimes in the autumn of October or November of 1958. As you will read later, I did get the scholarship.

On research front, Krishnaji was advising me as to how to do literature survey and to write to a few authorities in India to learn how to make *ferrites* or even buy them. During this period, Krishnaji never showed us his disappointment of not being appointed as a Professor in the Applied Physics Department. Then in early 1959, he suddenly left to become a Research Scientist at the Defence Department of the Government of India, Kirkee, Poona. I was quite a novice at that time in research and was quite worried. Krishnaji assured me that he would not abandon me and asked me to pursue the literature survey and collect information on how to design *ferrites* in India.

On April 20, 1959, Dr. Sushil Kumar Kor, who was a lecturer in the Physics Department at Allahabad University, came to our microwave laboratory, in the J.K Institute premises and told me that there was an aerogramme from Canada for me lying in Professor Banerji’s office. Professor Kedareshwar Banerji was the then Head of Physics as well as of Applied Physics. Dr Kor took me there and when I opened it, I found that I was awarded a World University Scholarship at the University of Saskatchewan, Saskatoon, Canada. I was surprised and thought that somebody had played a joke on me because I had not applied and not even heard the name Saskatchewan. I told so to Dr. Kor. He said, “Don’t be a fool Bhartendu. Try to remember, you must have applied.” After a few minutes, I remembered that it was the scholarship for which I had submitted

the application in the office of the English Department (see what the clerk had said to me in Hindi). That carried me to *Cloud 9*. I was overjoyed and it was also an honor to Allahabad University. The news was published in several newspapers. A few days later, I went to Poona for an interview and there I saw Krishnaji. I showed him the aerogramme. He was very happy and told me that a great weight had been lifted from his shoulders. He was worried about me. Although, he was sure that he would not stay in Poona for very long but did not want me to waste time. So he asked me to accept it and go to Canada. I wanted to wait until his return and not go to Canada as my parents were not too enthused about it. He then told me about his personal family difficulties. His father had died early and his mother did not want him to leave India, even Allahabad. There was little opportunity for him to get a PhD in Physics specializing in *Electronics*. I wondered if this made him suffer at the Allahabad University, which was a very conservative place. He left Allahabad, perhaps, only for this reason, but he may have soon realized at Poona that he liked the academic environment.

So I sailed for Canada on September 8, 1959 from Bombay (now Mumbai). He continued to advise me on research and other personal problems. I kept in touch with him even from Canada. He went to Jodhpur for professorship and then returned to Allahabad. He was made a Professor and later rose to the position of a Pro-Vice Chancellor. He later developed high blood pressure (BP); the politics of the university seemed to have taken a toll on him. He resigned from the pro-vice chancellorship and continued as a professor. He produced many PhDs. Some of his students rose to high positions in the Government as well as in private industries.

Krishnaji wanted me to return to India only when I would get a job appropriate to my qualifications, which, unfortunately did not happen. I went to the National Physical Laboratory, Delhi, as a visiting scientist for a year and met Krishnaji many times during that period. He had promised me that he would visit us at Toronto. When he came to attend his nephew's wedding (Govindjee's son, Sanjay, now a Professor at University of California, Berkeley), he wanted to visit Toronto. Unfortunately, we had to go to Vancouver for a conference and so his visit did not materialize.

In February 1997, he had moved from his 14 B Bank (Ram Narain Lal) Road residence in Allahabad to his own house at Govindpur in Allahabad. I, along with my wife Uma and younger brother Shailendra (Rajju), visited him there. Krishnaji was quite sick at that time; thus, we went to see him upstairs as he could not come down, but he was keen to see me. He was suffering from high blood pressure. We spent perhaps about an hour. He wanted us to stay longer, but we were on our way to Lucknow, so we had to leave. Since he had lost his younger son Ranjan (in a car accident) and his grand daughter (Neera from allergy to chocolate), he must have been very sad (also see the Tribute by Professor Ashoka Chandra, in this book). Krishnaji opened up his heart and we had an intimate discussion on many topics including research in India and abroad, and about students who had gone abroad and about those who stayed back, the pros and the cons. He was uncomfortable to say the least with his illness at that time but he forgot his illness while talking with me. I would like to remember him with his smiling face when I was about to leave him; it was the last time I saw him.

Professor Krishnaji knew my brother Shailendra (Rajju) who was selected in the Provincial Civil Service (PCS, finance) and the other younger brother Virendra (Viroo) who obtained his MSc in Physics (Electronics) from Allahabad University; he had become a Lecturer in Physics at the Government Intermediate College, Allahabad. In fact Professor Krishnaji and his wife (Bimla) once visited our home, when I returned to India in 1964 after receiving my PhD from the University of Saskatchewan. We lived in the Railway quarters in Civil Lines then, and he met personally my parents.

I wish to recount the following memorable episodes when we had some close personal interactions; these have left lasting impressions on my mind about him.

In 1956, a few weeks after we started our classes at the J.K. Institute, Pundit Jawahar Lal Nehru, the Prime Minister of India, visited Allahabad and the Institute. We students were very excited. However, when he actually came to visit the Institute, we the MSc (Tech) students, were not allowed to be inside for security reasons. We were incensed. Next day, we published a letter to Nehru ji in two

local newspapers *Amrit Bazar Patrika* and the *Leader*. I doubt that Nehru ji would have seen that letter but his advisors and the university authorities certainly did. The Proctor of the University of Allahabad scolded us. However, Krishnaji had a very good understanding of our feelings.

In 1956, I suffered from severe dysentery and was admitted to the university dispensary. Professor Krishnaji dropped in one evening. This indicates his feelings for his students, particularly for me. Dr. P. Ghosh and Dr. Ramesh Chandra were the doctors looking after the patients there. Dr. Ghosh was a very loud mouth and seemed to be a very rude person: I was scared of him. Krishnaji assured me that he would talk to Dr. Ramesh Chandra to look after my case.

When I was studying in the MSc (Tech), a teacher was not fair to me and I was afraid that he might fail me in the practical examinations. I talked to Krishnaji about it and he assured me with these words, “Don’t worry. A good teacher can never harm his student, specially a good student. He may not help the student, but will not harm the student. So do your best.”

Krishnaji was in the Physics department when he took me as a PhD student under him. He was under pressure not to take a student from the J.K Institute of Applied Physics. I am told that his reply was that he had himself advised Bhartendu to join the MSc (Tech) and now how could he abandon him?

In 1974, he had invited me, my wife and my two children for dinner at his Bank Road (University) bungalow. When we reached there, he learnt that we were vegetarians. He quietly requested his wife to only serve vegetarian dishes. This was a very gratifying experience for me that he would have so much consideration for us. I would like to mention here that the Late Mrs. Krishnaji was also a very gentle and pleasant person. All four children of Krishnaji: eldest Meenu (she lives in New Delhi) ; Late Deepak (he had lived in Allahabad); Late Ranjan (he had lived in Lucknow); and Chitra (she lives in USA) were also very polite. Never did they behave such that it would give me a feeling of being an unwanted visitor.

Krishnaji said many times to me that I had one thing in common with him. That was that we both used one name only. I wrote only

Bhartendu and even my PhD degree from Canada is in the name of only Bhartendu. I joined the Canadian Government as a research scientist as Bhartendu and retired as a scientific services meteorologist. They had made my name as Dr. Bhartendu. In the 1980s, when computers entered our lives, and two names were required, I started writing Bhartendu Srivastava.

I end this short essay on Krishnaji by mentioning that he cared a lot for all of his research students, helped all of them and was proud of their achievements. He was an excellent teacher, research guide, mentor and above all an unusually good man. He enriched me in more ways than I can enumerate.

Professor Krishnaji and Mrs. Bimla Asthana

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I am honored to write my recollections of Professor Krishnaji and Mrs. Bimla Asthana. I referred to them as Dada & Didi (elder sister). I will be rather brief.

Dada was the most kind and generous individual I had the privilege of knowing. He played a major role in shaping my career. In 1957, he helped me obtain admission into the J.K. (Juggilal Kamlat) Institute at the University of Allahabad. After I completed MSc (Tech) in 1960, he helped me get a job at the Scientific Instrument Company (SICO) in New Delhi. I was not happy doing routine jobs at SICO; thus, I applied for a PhD program at several US universities. Fortunately, I was accepted at the Michigan State University. I needed two individuals who could be my financial guarantors so that I could secure a visa to come to the USA. Dada helped me again by becoming one of those two guarantors. Unfortunately, for various reasons, I did not complete the PhD program. However, I chose the career path of business and currently I am the President and the CEO of my own company, Gulton, Inc. in South Plainfield, NJ.

Every time I returned to India, I would make sure that I met Dada & Didi. Dada appeared to be genuinely happy to see me. My wife (Joan) and kids (Anjali & Sanjay) enjoyed meeting Dada and Didi. During one of those visits to India, Dada and Didi hosted a dinner party for us (me, my wife and kids) in New Delhi. I felt proud. I met Dada both the times he visited USA. We were honored to have Dada and Didi stay with us in New Jersey for a few days when he came to USA the second time. I was very sorry when I learned that Dada had passed away. Dada and Didi are no more but their kindness lives on.

Professor Krishnaji: My Mentor, a real Teacher, Experimentalist *par excellence*, a Visionary and a Great Human Being

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I was one of the lucky persons who met a real teacher - Professor Krishnaji. In the text below, I will call him Krishnaji, but each time, I mean it to be Professor Krishnaji.

I joined the University of Allahabad for my B.Sc studies, with Physics, Chemistry and Mathematics, in July 1956. I was one of the ten students in the physics tutorials of Krishnaji. I recall reaching the microwave laboratory in the basement of Juggilal Kamlapat (JK) Institute of Applied Physics, a big air conditioned hall filled with tall instruments humming with activity. In the middle of the hall, there were four tables in a row. Krishnaji, sitting in the center, was discussing with the teachers, I thought; it was only later that I came to know they were his research students. He looked at me, a shy fifteen and a half year old lean and thin boy from a village. When I told him that I was a student of BSc (Part I) in his tutorial, he asked some searching questions and knew all about me and my problems. He assured me that he would help me; and, from that day till his death in 1997, he had been my mentor.

It is very difficult for me to write a memoir of a person, who has guided me every moment for more than forty years. It is, therefore, a write up of my journey of life, which was shaped by him and his wife *Shrimati* Bimlaji. She always treated me as her younger brother and I called her *Jiya*, the respected elder sister.

Being a meritorious student, I was awarded a merit scholarship, but the money was not available when I needed most in the months of July and August. Krishnaji arranged to have me tutor and coach

college students in Physics and Mathematics for one hour in the evenings; this provided me just enough monthly income to meet my boarding expenses.

I had heard statistics, many times, that almost 70-75% students failed in BSc (Part I), and fearing the worst I became very regular in my studies. Krishnaji saw that I had books; he even gave me books from his own collection; in addition, I was able to borrow other books from his senior research students.

Krishnaji was always available to his students, although he was single handedly managing the 3 year-course of MSc (Tech) in Applied Physics. He personally supervised the construction of J.K. Institute of Applied Physics, arranging a generous donation from the Singhania family of Juggilal (Late Lala Juggilal) and Kamlapat (Late Lala Kamlapat), known business tycoons of Kanpur. Starting an advanced course in Electronics, and at the same time teaching BSc and MSc classes of Physics was an example of hard work set by him. His contribution to the establishment of the JK institute, unfortunately, has not been adequately recognized in the history of this institute.

I was a first year BSc student in 1956 when the mega event of inauguration of the J.K. Institute of Applied Physics took place. It was exciting for us that Pundit Jawahar Lal Nehru, the then Prime Minister of India, spent more than half a day looking at the exhibits, and discussing the research being carried out by Krishnaji and his students; the two talked about the future plans as well. (A photograph of Pundit Nehru with Krishnaji is reproduced in Part C; see Fig.1, p. 161.) There was a huge crowd that day, and the program was displayed on television screens by close circuit cameras for the first time in Allahabad. Krishnaji, the real founder of the J.K. Institute of Applied Physics, was a visionary; he saw the emergence of solid state electronics and microwaves in every walk of life in the future, already in the 1950s.

During the summer of 1957, I wanted to stay at Allahabad so that I could prepare, in advance, for the BSc (Part II) course and also earn some money. Krishnaji hired me as a research helper in one of his research projects. That opened a real window of future opportunity

for me. Ganesh Prasad Srivastava was writing his thesis on microwave absorption in gases and Prem Swarup, the first student of Krishnaji, had completed his doctoral work and was helping Krishnaji to teach MSc (Tech) course. Shankar Swarup was working on microwave absorption of solid composites, wax impregnated by aluminum particles. I was trained to separate different micron size aluminum particles, placing them on a rotating wheel. Different size particles were photographed and the sizes determined with the help of a comparator. They were catalogued according to the size and then composites were prepared.

After graduating with a BSc degree in 1958 (with merit), I needed advise concerning applying for admission for MSc studies. I wanted to do MSc in Physics, but MSc. (Tech) in Electronics was another very attractive program. Krishnaji knew my family circumstances and he told me that I should do what I liked. During those days, the top 45 students, with first division marks, from all-over India were admitted in the MSc Physics program, but statistically only 4 to 5 students would obtain first division in MSc. I joined MSc (Physics) in July 1958. I did well in MSc (Previous) and ranked first in the class.

During the summer of 1959, I again approached Krishnaji to arrange for my stay in Allahabad. He talked with Professor Kedareshwar Banerji, the then Head Of the Department of Physics, to appoint me as a laboratory assistant in an existing vacancy for just the summer vacation. Prof. Banerji was a very kind and generous person and gave me the job of the laboratory assistant for the summer period. I learnt the upkeep of the instruments; but, most of the time, I was in the Physics Department Library cataloging the books and checking the stocks. That was when I did browse a large number of books. In my MSc (Final), I opted for specialization in Electronics, but soon Krishnaji left the University of Allahabad to join as a Senior Scientific Officer in the Indian Defence Laboratory at Kirkee, near Pune. When the J.K.Institute was fully established and made functional, instead of its able and deserving founder Krishnaji, another professor (Prof. Satyendra Nath Ghosh) was appointed as the

Professor of Applied Physics. Krishnaji, a born teacher, found it difficult to be tied to the Defence Laboratory, and he returned to Allahabad University. It was really a great relief to all of us to find him amongst us in February 1960. At our request, he taught us Physics of Radio Receiver, Transmitter and Television. What is remarkable is that he would lecture to us for more than 3 hours at a stretch, and what is more remarkable is that all of us were glued to his words. These lectures were very thrilling and were in complete contrast to what we had been taught earlier by some other teachers.

I was first in the rank of 1960 MSc (Physics) batch of graduate students. I was very confident to be accepted for the doctoral program under the supervision of Krishnaji, but when I approached him he told me that he had no research project available that would provide me a research fellowship. On top of this, he had already accepted two research students to be enrolled under him during the academic year 1960-1961, and according to the rules of the department, no more than two students could be enrolled for DPhil degree under one teacher in one academic year. He advised me to join with another teacher in the Department of Physics, who had the research project to finance me. I agreed to his suggestion, but soon realized that it was a mistake.

In January 1961, I was appointed a Lecturer in the Department of Physics as a faculty member had taken a leave of absence; thus, the appointment was temporary. Further, my real ordeal in life also started with it. I was struggling to stay at Allahabad with my younger brother and sister, who were living with me as they were studying in the university and in a school, respectively; further, I did not have a regular income. I was being shunted off and on from a teaching job. It was then that I thought to go to USA for my PhD. I applied to five universities in USA. All of them awarded me fellowship, and I planned to go to Purdue University for PhD in Experimental Solid State Physics. In the summer 1962, I went to seek Krishnaji's advice on the issue to go to USA. He knew that in my absence the education of my brother and sister would suffer. He narrated his own story as to why he remained at the University of Allahabad taking care of his

ailing mother and education of his two younger brothers (Gopalji and Govindjee) and his younger sister (Malati). I told him that my circumstances were similar and that I *should* remain in Allahabad, provided I could work with him for my DPhil thesis. He accepted me. I soon started working on microwave spectral line broadening due to molecular collisions, a problem on which Dr. Suresh Chandra had just completed his doctoral thesis. It was Dr. Suresh Chandra who really initiated me to research methodology and the challenges in the field of spectral linewidths - a new modified source modulation spectrograph to be built and collision cross sections due to the induction, dispersion and exchange forces to be formulated. For theoretical formulation, we needed mathematical basis of molecular collisions. I was asked to prepare a series of lectures on the required topic to be delivered in the research seminar, with my mentor Krishnaji, Professor Harish Chandra Khare and other teachers in the audience. (Prof. Khare, after completing his PhD thesis in Theoretical Physics from McGill University, Canada, had joined the University of Allahabad as a senior teacher in the Department of Mathematics). For me to deliver such lectures in the presence of senior teachers was really very discomfoting, but through those lectures I learnt to study new subjects with confidence.

One evening at Tea-time, Krishnaji narrated how he started the work in the field of microwaves. Dr. Megh Nad Saha was visiting the Physics Department of Allahabad University in 1950. He told Krishnaji that he had seen the absorption line of ammonia in the microwave region on a cathode ray oscillograph in Walter Gordy's laboratory in USA, and asked him to work on such contemporary (modern) research field. Krishnaji believed in himself. He built his own instruments for doing experiments on microwaves. In the early 1950s, the X-band klystron power supply was fabricated and with that the X-band microwave bench for the microwave absorption measurements in gases was started (Dr. Prem Swarup, early 1950s), S-band, K-band and J-band benches for absorption measurements in gases at high pressures (Dr. Ganesh Prasad Srivastava, mid 1950s), in solid composites (Dr. Shanker Swarup, late 1950s) and in liquids

(Dr Surendra Kumar Garg, late 1950s; Dr Abhai Mansingh, early 1960s), source modulation microwave spectrometer (Dr. Suresh Chandra, late 1950s); its improved version, the author (Dr. Shyam Lal Srivastava, mid 1960s), electron spin resonance set up (late Dr. Baikunth Nath Mishra, late 1950s), Stark modulation spectrometer (late Dr. Arjun Singh Rajput, early 1960s) and pulse ruby laser (Dr. Rajendra Kumar Laloraya, late 1960s). Almost all the components of these set-ups were designed and fabricated in the department under very close scrutiny of Krishnaji, with excellent support from his technician late Sri Ram Chandra, who was especially trained on the job by Krishnaji himself. This is how microwave research laboratory was built by Krishnaji in India, showing that even the most sophisticated instruments could be built following the mantra “*do it yourself*”. Many research students later worked for their doctoral thesis on these facilities.

Krishnaji was an experimentalist *par excellence*. In one of the scientific gatherings, Prof. Babu Lal Sharraf (a very committed and innovative scientist who invented new experiments for BSc and MSc teaching laboratories) aptly remarked “*Prof. Krishnaji is a phenomenon in Experimental Physics - let us follow him*”. Recognizing his outstanding contribution in the field of microwave research in India, Krishnaji was awarded Sir Chandrasekhar Venkat (for short C.V.) Raman Award in 1976 (instituted by Hari Om Trust) by the then Prime Minister Shrimati Indira Gandhi. (A photograph of Indira Gandhi with Krishnaji is reproduced in Part C of this book; see Figure 3, p. 163.)

On May 8, 1963, I was married to Sushma and we were both accepted as family members in the family of Krishnaji. For us that was definitely a social upliftment. When I went to the University of Illinois at Urbana-Champaign in November, 1966, to work with Professor William H Flygare as a post doctoral fellow, I enjoyed the hospitality of Govindjee (youngest brother of Krishnaji) and Rajni Govindjee staying with them for about two weeks and even later enjoyed the lively get togethers with them during the week ends of 1966-1967.

During 1970-1971, Krishnaji was invited to the University of Queensland, in Brisbane, Australia as a Webster fellow; this was the time when more than a dozen research students were working in his group. On his return to India, he accepted the responsibility of Pro-Vice Chancellorship of the University of Allahabad. The University gained from his administrative skills, but we were losers, deprived of his day-to-day discussions.

Krishnaji retired in 1982, and was awarded the emeritus professorship by the University Grants Commission, New Delhi, which he declined. He decided to help his eldest son Deep Ranjan (fondly called Deepak; sadly, on 8th September 2008, Deepak passed away) in establishing a television assembly unit, but it did not succeed resulting in a great financial loss. Although there were a few partners in the adventure, Krishnaji took on himself the responsibility of repaying the loan. For a man who had retired without any significant pensioner's benefits, and who had spent all his reserves in bringing up the family, it was a decision possible only by a person of the character of Krishnaji. He accepted to work as the scientific advisor of Maharishi Mahesh Yogi and repaid all the loans.

He lost his second son Raj Ranjan, his younger brother Gopalji's daughter (Manju) and her 2 sons; and his own granddaughter Neera (daughter of Ira (Meenu for all of us) and of Dr.Suresh Chandra). These tragedies would have completely broken any mortal, but he was a pillar of strength rehabilitating the survivors and healing them.

It was during these difficult days he had to be operated upon for a gallbladder stone by Dr. Nandlal Tahliani, a famous surgeon of Allahabad. During the transition from unconscious state (due to anesthesia) to conscious state, I, sitting beside him, heard a few sentences of the grief, pain and sorrow he had suffered. I realized "*even a saint is a human being suffering silently, not exhibiting it lest others get hurt*".

During his entire life Krishnaji helped others, irrespective of whether they were his family members, friends, students, colleagues or even strangers. Every evening a host of needy persons used to gather at his residence, and he attended to all of them without any

discrimination, sending letters of recommendations, talking on telephone, writing the problems of a few in his diary to which he did attend and solved. There are a large number of beneficiaries like me.

On 12th of August 1997, he, along with his wife Shrimati (Mrs) Bimla (Asthana), daughter-in-law Poonam, wife of Late Sri Raj Ranjan, went to his family physician Dr. Arun Kumar Mukherji to get himself checked up. Dr. Mohan Swarup Sinha took them in his car. Krishnaji requested Dr. Sinha to take Poonam to the eye specialist. Dr. Mukherji, who examined Dada, did not find any cause of immediate concern, but in the night he suffered from a stroke from which he did not survive; Krishnaji, our Professor Krishnaji, breathed his last on 14th of August 1997 in the intensive care unit of the Nazreth Hospital of Allahabad. We were crest-fallen; the beacon of light was gone. His wife Shrimati Bimla (Asthana) supported the family and kept on caring silently for her children, grand children and many such families like ours with motherly love and affection till her death on 18th of April 2007. We miss them both.

Though Krishnaji had retired from active service, he always wanted the Department of Physics of the University of Allahabad, to reach the new heights. With the change of guards in 1986, the department was generously supported by the University Grants Commission (UGC), New Delhi through *Committee for Strengthening Infrastructure in Science and Technology program* (COSIST), Special Assistance Program (SAP-1, SAP-2) and by the Department of Science and Technology (DST), Government of India through Funding for Infrastructure Development in Science and Technology program (FIST). Later, a new center of nano-science and many individual research projects have been supported by DST. I feel privileged to be associated with the first phase programs of strengthening research in the department. Krishnaji was always available to guide me and show the direction. I, along with a few teachers of the Physics Department, started the twin centers - Kedareshwar Banerjee Center of Atmospheric and Ocean Studies and Megh Nad Saha Center of Space Studies under the newly established Institute of Interdisciplinary Studies in 1999 with the

active support of the Department of Ocean Development, Government of India and the Indian Space Research Organization, Bangalore, respectively. I believe I could do it because of the blessings of my teacher and mentor Krishnaji. Today, the Physics Department has been granted the status of Center of Advanced Studies by UGC, the seed for that was sown by many able teachers of the yester years in which the contribution of the microwave group of Krishnaji had been quite remarkable¹.

Krishnaji did profess “*no one is indispensable in this world*”. But I believe that the soul is immortal. He is still leading us from the darkness to light. At least this is true for me. Every morning I chant a mantra he gave me that calms me from the turbulent emotional upheavals. This is his greatest gift to me!

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1. The selected list of publications of Professor Krishnaji is given in Part D of this book. His paper on ‘*Development of Scientific Research in India—a Casualty*’, published in 1961, in *Science and Culture*, is reproduced in Part D, because some of his observations are relevant even today!.

My Personal Tribute to Professor Krishnaji

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It is an honor to write something short and personal in the memory of Professor Krishnaji. I will not attempt to write about his scientific and professional achievements, which were most impressive indeed. Suffice it to say that he was among the best known experimental physicists of his generation, who pioneered research in microwave spectroscopy and who set up a world class research laboratory with most modest means, designing and building most of the equipment himself. He trained a generation of researchers, who acquired international distinction in turn. I am going to talk instead of his deep affection and concern for his students, which defined him more than anything else. And, I will talk of how he touched my life.

As I look back I recall the year of 1961 when I had just completed my Master's degree in Physics from the Allahabad University. I was just 19 then. My father, Dr Kailash Chandra Berceria, himself an academic, an Economist, had his heart set on my becoming an IAS (Indian Administrative Service) officer. Perhaps in his own life he had suffered unfair comparison, even within his immediate family, with those in administrative service or been subjected to the haughtiness of some senior administrator in his work place. Whatever be the reason, it was his chance of getting even with all the injustice meted out to him, if his son became an IAS officer. He had no doubt whatsoever that his son would be successful and join the IAS cadre. Allahabad University was the Mecca of IAS in those days and anyone who had done as well as I had more than an even chance to succeed. Indeed, all my classmates in the immediate circle of friends who opted to try for the IAS succeeded. One rose up to be Cabinet Secretary, another close second, many others retired as Secretaries to the Government of India. The fact that I was only 19 and not eligible for appearing for the IAS for at least another two years mattered

little. He wanted me to join another Master's program, in Mathematics, which would be a 'scoring' subject when I could indeed appear in the IAS examination. Unfortunately, my heart was equally set on research and an academic career. For me there could not be a better calling than to be an academic engaged in intellectual pursuits, engaging in research, unraveling the mysteries of natural world. I dreamt of a world where I would have the chance to develop that special theory, write that special equation, conduct that special experiment that would open up a fresh vista of understanding. Everything was possible; the world of physics was my oyster. I was a romantic. What else can you expect from a 19 year old! I could not empathise with the dreams of my father. I saw becoming an IAS as ordinary and trite in comparison.

In those times you did not defy your parents. I was brought up to obey my parents' wishes. But my heart was elsewhere. I could see the luminary example of Professor Krishnaji in my immediate surrounding. I would admire his dedication to research, admire his enthusiasm and obvious enjoyment in physics, marvel at his ability to design complex instrumentation for research, and secretly aspire to emulate him. I approached Professor Krishnaji and requested him to accept me as his PhD student. To my great delight, he agreed. I joined his research group. In those days his laboratory was situated in the basement of the J.K. (Juggilal Kamlapat) institute. His lab was air-conditioned and two of the senior researchers in the group also worked from the same lab in which Krishnaji sat and worked. Their experimental rig had been set up in that laboratory. Some of us, the more recent members, the juniors, sat in the lab across the corridor. We would read, study research literature, discuss among ourselves, and try to get ideas for a research topic for our PhD thesis. That the lab where we sat was not air-conditioned, that it was peak summer and Allahabad could get unbearably hot, that our research ideas were still very fluid and in a nascent stage, mattered little. We would spend almost the entire waking hours in the lab, going out only for meals and occasional game of badminton in the vicinity. A sense of optimism was palpable and permeated our being. However, from time to time, letters would arrive from home. The pressure from my father for pursuing the goal of IAS continued. It was a serious distraction to

say the least. It would disturb me thoroughly. I would get depressed. Occasionally, I would think of giving up my research assistantship and think of joining the Master's in Mathematics. I could not dream of going to Krishnaji with this problem. He was just too high a person for me to even contemplate involving him in my petty problem. I suffered. My close friend Shyam Lal Srivastava, (later to become a Professor at Allahabad University, a distinguished researcher, and successor to Krishnaji's microwave lab) was yet to join Krishnaji as a research student but was otherwise in close touch with him. He knew my predicament.

While I was struggling with this pressure, and, sitting in the opposite lab away from the eyes of Krishnaji, I assumed that no one else was privy to my situation. It seems, however, that Krishnaji had sensed that something was bothering me. I guess he asked Shyam Lal. I would never know for sure. What transpired, as I learnt much later, indirectly from my parents, Krishnaji traveled on his own to Haridwar to meet my parents. He discussed the matter in depth with them and persuaded my father that I be allowed to pursue a research career. He was a very busy person, could hardly afford to take a few days off just to talk to the parents of one of his students, not knowing if his suggestion would be welcomed. But he did. Those days the journey from Allahabad to Haridwar took a solid 24 hours in train. It was not a comfortable trip and he spent his own time and money for it. And the intended beneficiary of his munificence, myself, had no inkling whatsoever. I came to know of it, not from Krishnaji, for he never once mentioned it to me or to anyone else, but from the letter that followed from my mother, who had all along supported me in my desire to pursue a research career. To my utter surprise my father had agreed that I could continue in research. Apparently Krishnaji had also said to my parents that he saw great potential in me and that his lab alone would not be able to provide the comprehensive environment needed to help me flourish fully. He advised that I be allowed to go abroad to the US for my PhD.

But, by then it was already late for applying for scholarship to the US universities. I was asked to apply to several good universities. I got admission immediately from several but they all pointed out that the assistantships/scholarships for the year had already been

decided. It was out of the question for a person of my means, indeed of most middle class working families, to pay one's way to a PhD. Even if one could afford it, those were the days of extreme foreign exchange restrictions. One could get only a princely sum of seven dollars for a US visit! Once again Krishnaji came to my rescue. One of his younger colleagues in the Department, Dr Sushil Kumar Kor, was to proceed soon to the University of Maryland on a Post-Doctoral fellowship. I believe Krishnaji asked his student Dr Suresh Chandra to speak to Dr Kor. If my recollection serves me right, Dr Kor came to Krishnaji's lab and in his presence agreed to finance my costs until I secured assistantship and was able to pay him back. Krishnaji had no doubt that I will obtain an assistantship and will be able to return the money. A big hurdle was over. I wrote to the University of Maryland that I was now in a position to accept their offer of admission. The academic session at Maryland had already started and I would be able to join the fall semester only in the middle of it, but the university still allowed me. I was set to leave for the US.

Before I proceed further, let me take the opportunity to express my gratitude to Dr Kor. If he had not agreed to support me at that crucial juncture, who knows I may never have proceeded to the US for my PhD. He was truly God-sent.

But I spoke too soon. The hurdles were not quite over. Dr Kor's support would extend at best to the period while he was still a post doc at the University. The PhD would clearly take longer. In the absence of assured financial assistance for the full duration of the PhD, the US embassy would not grant me a visa. I had to show a financial *guarantee* to cover the estimated costs. It was already late; my offer of admission would not last for ever. Krishnaji came forward and stood as a guarantor. He also asked his colleague, Dr Arvind Mohan, to provide guarantee, who, if my recollection serves me right, generously pledged his house to do so! Dr Shanti Swarup Bhatnagar also provided me his guarantee. How does one thank those who came forward so selflessly, at considerable personal risk, to help out a mere student! Almost five decades later, it is difficult to believe that there existed such persons when one encounters totally self-centered persons, who would consider it 'foolish' to risk so much for a virtual stranger. But Professor Krishnaji had a quiet moral authority which

extended to his friends and students and they were touched and transformed by it. I can recall many instances later in life when Krishnaji would ask his students, myself included, to help out another needy student and we would do so without asking any questions.

I proceeded to Maryland. Within a couple of months, by the time the fall semester ended, I was offered assistantships both by University of Maryland and Cornell University. I accepted Cornell's offer and moved to Ithaca, New York. I paid back the money I owed Dr. Kor but I can never repay his debt. The course of my life had been set. My life had taken a turn that shaped my entire future, and I can only pay a silent homage to Krishnaji and all those like Dr. Kor, Dr. Bhatnagar, Dr. Arvind Mohan, and many others who made it possible.

Professor Krishnaji continued to take interest in my progress, as indeed he did for all his students. I recall his visit to the US during the period I was there. I had finished my PhD and was working as a scientist at the Brookhaven National Laboratory, Upton, Long Island, New York. At the time Krishnaji had temporarily moved to Jodhpur, Rajasthan, India, to head the Department of Physics at the University there. From Jodhpur, he sent me a letter offering me a faculty position in his department. I had not asked him, but in my conversations with him he had learnt that I was planning to return to India. He would have spoken to others too, because I received several other offers too. That was surprising as I had left India at the young age of 20, and knew virtually nobody in the scientific establishment in India. I could not return just then but came back a couple of years later. Soon after returning to India I was appointed a full professor at Regional Engineering College (now renamed as National Institute of Technology), Srinagar, Jammu and Kashmir, India, at the age of 29. I am almost certain that Krishnaji having spoken about me to colleagues and friends helped me in this appointment. He was greatly respected in Physics circles and his recommendation mattered among senior persons.

I will not dwell on Krishnaji's continued support to me that helped me throughout my life, because I do not wish to talk about my limited self even though, in a manner, I cannot help but to think of him through his impact on my life. Later I joined the British Council as its Science

Adviser. He was my referee. Still later I joined the Government of India, first in the then Department of Electronics, and later as Educational Adviser to the Government of India. I continued in the Government for almost two decades, holding positions at the level of Secretary to the Government of India for 12 years, but I had the satisfaction of choosing only those positions that either had strong academic content or were closely allied with the academic world. In a sense, I could fulfill both my dreams to be a researcher as well as my father's desire for me to join the cadre of administrators. Krishnaji was my referee throughout. He would take great pride and pleasure in my growth. He would visit me or contact me each time he came to Delhi. But he did that for all his students. He would have a list of telephone numbers of all his students when he came to Delhi and would phone them to enquire about their welfare. Each of us felt that he alone was a special favorite of Krishnaji, but he loved all his students. His heart would encompass all of them. Sometimes I wonder if his immediate family, his children, did not resent the time, the affection he showered on his huge community of students, and the efforts he undertook on behalf of his students. Surely they felt deprived! But, I hasten to correct myself. They surely knew how large his heart was, that it could cover each and every one, and he could make each one feel especially close. Govindjee, his youngest brother, tells me that he always thought that he was the only one on this Earth on whom he (his Dada) spent all his time and energy in seeing him succeed.

In later years, I had several opportunities to talk to Krishnaji on various matters. We spoke at length but I never heard him say even once an unkind word about any person. He would also not talk about himself. I am sure, like anyone, he had suffered injustices, had been denied certain things, which were rightfully his, but he never pondered over them, never spoke of them, never allowed them to detract him from his concern for the people and the tasks to be performed.

One particularly sad incident comes to mind, which revealed another facet of his personality to me. Krishnaji had turned seventy. His students in Delhi decided to commemorate the event by organizing a special seminar, I believe, on *Advances in Microwaves*. This was to be at Delhi University. A few weeks before the date, a truly tragic

event happened. While travelling with his family, a young wife and two children in his car, Krishnaji's son, Ranjan, met with a horrible road accident and died on the spot. We were stunned. I knew the event we had planned would have to be cancelled. But, Krishnaji set his personal tragedy aside; he could not disappoint his students. He travelled to Delhi and spoke at the symposium. He was calm and collected and performed all his duties as only he could. Later, after the event, as I was travelling with him in the same car, I did not know how to broach the subject of his son's death. Ultimately, I did so very hesitatingly and he spoke about it in a most calm and objective manner. He was truly '*sthitprajna*' (who is un-wavering and stable in his judgment on what is right or wrong; has the intellectual capacity to discriminate between them), and a '*karmayogi*' (who does his duties without thinking about rewards). He knew how to handle personal sorrow and how to get on with his '*karma*' irrespective of how much it impacted him.

Professor Krishnaji is no more but his impact on our lives continues. In a small way all of his students have been touched and transformed by him. We can only hope to emulate him in some small measure as we go about our lives. Can we ever touch as many lives with as much compassion and love as he did? I guess not, but we can try, howsoever incompletely, as a measure of our respect for him, and in homage to his memory.

The Personality of Professor Krishnaji

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The education system in India has come a long way since the time when I was a student. I joined the Allahabad University for my graduation in Science (Mathematics group) way back in 1959. When we started going to the science block campus (Muir Central College with Pisa like tower) we started hearing about academic stalwarts and personalities in the three departments, i.e., Physics, Chemistry and Mathematics. All this generated a mixed feeling of pride and fear among us. Pride due to the fact that we were lucky to be taught by these stalwarts, and fear due to the psychological apprehension of facing them. Professor Krishnaji of the Physics Department was one of them and I feel privileged that I was taught Electricity and Magnetism by him. (From hereon, out of affection, I will refer to him without his title.) Besides his systematic, methodical and conceptually clear lectures, he also gave demonstration of experiments, such as those on cathode rays that have remained ingrained in my mind.

After obtaining a BSc degree, I, like few of my friends, joined MSc (Physics) which I completed with specialization in *Electronics* in 1963. It was during these and subsequent years as DPhil and Post Doctorate Research Scholar and then as a Lecturer in the Department of Physics that I became aware of the various facets of Krishnaji's personality as a teacher, a motivator, a trainer, a career shaper, and a stimulant for overcoming the barriers in the present and even the future life – academic or social. Thus for me, Krishnaji had undoubtedly a towering '*Big but Kindly Brother*' personality.

It is almost half a century ago that I studied at the University of Allahabad. Many things in the education field, as well in other fields, have changed a lot. The University of Allahabad has grown and changed under pressures of proliferation and globalization giving hope for a path projected for better future. Today, the *market* is the main driving force in all spheres – although its fruits are not as evident at present in our society as they should have been – may be due to our societal structure and large variation in the magnitude of individual prosperity. Willingly or unwillingly, we are being driven by the forces of globalization and market even in the field of education—school, college or university level including research and development activities. As a result everything is being measured in a quantitative way. Even the quality and personality of any individual is being quantified. Efforts are being made so that every aspect of teaching and research is periodically assessed and accredited by governmental and non-governmental agencies. Even research journals and publications are being labeled in terms of impact factors and citation index numbers are being quoted. Even in such an environment, it is difficult to quantify and generalize the impact which Krishnaji had on building of our base, career and future. I feel privileged to be able to list few facts from my memory which are symbolic of Krishnaji's greatness.

During our MSc Electronics practical (laboratory) classes, whenever we had any difficulty with circuits, he encouraged and motivated us to come back to him with the trace of circuits, starting from the output to the input and then, he would discuss clearly, with us, the concepts pertaining to trouble- shooting in the circuits.

After completion of MSc, when I approached him with a desire to pursue research, he did see to it that an arrangement was made for me to do research.

After completion of DPhil, he readily consented to be my adviser for post-doctoral research and for my senior research fellowship.

When any faculty went on a leave of absence in the department, he helped my selection and continuance as a Lecturer without a break.

After four years of temporary lecturer's position in the department, when I was appointed, on a permanent position at Jiwaji University, Gwalior, Madhya Pradesh, he encouraged me to accept the new position. Moreover, he gave me many suggestions to prove myself in a new place, which I think, I utilized to the maximum possible extent to shape my future career.

Even after I had been at Gwalior for sometime, whenever I met him at Allahabad or Gwalior, he always had words of encouragement for me after enquiring as to what and how I was performing.

The above is a list of few of the instances out of many moments of direct and indirect inspiration he had given me. During the period I spent as a research scholar and faculty member, we used to meet around 4 P.M. at our usual "*Tea-table*" in the laboratory. We would wait for his arrival. Even at Tea-time, he would encourage academic discussions including those related to teaching and research. As a result, discussions including research work presentations became a routine during the tea time. He would participate in these discussions as much as possible with probing enquiry, saying sometimes that others present may know more in that particular specific area. During fabrication and setting up of research equipment in the microwave laboratory, I had seen him monitoring the various aspects of development and getting into discussions with everyone: students, authorities and technicians of the workshop. He never hesitated to sit with the technicians within the workshop or laboratory, giving tips and discussing the ongoing and future planning of developments in relation to equipment and facilities in the laboratory. As a result, the Microwave Laboratory of the Physics Department of University of Allahabad, at that time, had the name and fame as one of the first and best in India; it was a model for duplication elsewhere. In fact it came to be known as *Krishnaji's Laboratory* and the research work carried out there became known and recognized internationally without being accredited by any agency.

I hope that the above few lines will bear some imprint and indication to the impact which Krishnaji has made on the academic

life and career we all are enjoying today. Thus even in this era of impact factor kind of evaluation, it is difficult to quantify and generalize the measure of Krishnaji's personality and greatness. Writing these lines has given me the privilege to relive those cherished moments again in whose silent inspiration my present life goes on and on with a positive confidence to face the future without any tint of fear. To me, this is a tribute to Krishnaji's magnanimous personality.

My Memories of Professor Krishnaji

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I knew Professor Krishnaji long before I had faced him in my MSc (Final) *Electronics* class. I will refer to him as Krishnaji in this recollection. It was a time when, both within and outside the University of Allahabad, whoever talked about him expressed an appreciation of his teaching both in the class and in research in the Physics Department. It was my curiosity to somehow know what is in his teaching that sets him apart from all other teachers. I was too young and the only desire was to learn more. For me, he was a mystic whom I barely recognized. I was, in my view, a stupid backbencher in the class but could somehow obtain a first division in BSc examination. Due to my merit, it was easy for me to get admission in MSc (Tech), a three year course which was in the J.K. (Juggilal Kamlatpat) Institute of Applied Physics, but when I consulted one of my senior family relatives at Allahabad, he advised me to join MSc (Physics) because there I would have a close association with Krishnaji. It was 1962. I had no idea of internal politics of the two departments (Physics and Applied Physics). I followed the advice and joined MSc (Physics) and this gave me an opportunity to be in close association with Krishnaji in my MSc final year, since I was selected for the *Electronics* option.

The bell rang. Professor Krishnaji entered the class room. He started teaching and I started learning. For others, it might be termed as normal. But for me, it was different. I was hypnotized, may be due to my initial impressions of him. I was trying to grasp every word he spoke. I felt I was learning. I felt elevated more than in any other teachers' class. He was teaching Electronics. I was learning not only electronics, but how one should lecture in the class, and how a subject

can be made lucid and palatable. I remember how his total devotion towards the subject kept all the students spell bound – a difficult subject was made simple and we never knew when the time passed. I don't recollect when I had such a good experience in any of my earlier classes. (I had horrible experiences especially in class seventh and eighth when one of my teachers caned me on my palm for a petty mistake, and sometimes certain disciplinary measures at home were quite uncomfortable.)

Whenever, we approached Krishnaji for any simple problem in his experimental laboratory classes, he generally told us scores of other things related to that. It was amazing: now I was not a backbencher but always tried to sit in the front row, just not to miss anything he taught. I had courage to ask him questions in the class and also I started going to his home for any further difficulties.

I passed my MSc with good marks in Electronics and then I approached him for joining research with him. I was selected. This was yet another milestone in my life. He very clearly told me that if I opted for academic life I would have to lead a very simple life and I would not be able to live a comfortable and luxurious life. He further showed us the direction that if we could not lead the simple life we must choose the administrative line. I decided for the first option: A life dedicated to the growth and dissemination of knowledge.

Three in the afternoon was the *Tea-time* in Krishnaji's laboratory, i.e., our laboratory. We all, in his research group, sat together for a cup of tea and snacks. Krishnaji took daily stock of progress of our work and discussed any hindrance that we might be facing. This 'sitting together of the whole group of about 10-14 persons around a table' was like Krishnaji taking an informal class. Here, he not only entertained us with simple stories of his past days but also taught us how to struggle to get our work done in a particular situation, to be righteous with our own colleagues and students, to live in the research group like a family. We called him *Dada* (meaning elder brother). He was very particular that the senior members be respected by the junior members, and that the junior members receive due help and affection. After 1972, Dada became involved more in the University activities and became the Pro-Vice Chancellor of the University. He was instrumental in improving the status of the National Academy of Sciences India. Although he was no longer with us on a daily basis,

yet we always felt his presence in the laboratory. Due to economic set back in the country, we faced a lot of hardship in research and teaching in the Universities everywhere in India. Almost every one of us was trapped in situations where all the research activity was showing a decline. Our departmental library was without journals. Only few grants were available from the government for research projects. Research scholars dwindled. Time spent by each member in the laboratory was reduced considerably. Krishnaji asked not only me, but everybody in the group, to keep up the tempo of research.

Finding one alibi or the other, every one of us was not only drifting away from research activity but also from each other in our personal relations. In 1979, our *Tea-club* was shut down. Krishnaji, our Dada, retired in January, 1982. Things were moving fast at the other end of the Globe. Computerization and automation changed the whole approach towards research. I could not catch up to the present new scenario. I was trailing far behind. My family problems never gave me time to repent for it. One day when I visited Krishnaji at his home, he told me, "*Pradip, united you stand, divided you fall*". I understood what he said. He clearly meant our unity was due to our research work in the laboratory, and by this time a total devotion and sincerity towards a purpose was missing in me. In my own view, I feel I could not live up to his expectations. It seems that I fell apart. On 13th January 1997, we celebrated Krishnaji's 75th birthday. His inspiration had moved us a long way. Till his death on August 14, 1997, we always felt that there is some one to guide us. My dreams and goals when I had met him first, and my poor, tired, and helpless state, when I last touched his feet at the time of his cremation made me reevaluate myself.

I wanted to be a good teacher- I do not know where I stand now. I wanted to be a good researcher - I feel am not. I wanted to be a good man - I could never please others. I wanted to search my own path – I felt lost. I may have judged myself harshly; however, writing this recollection of Professor Krishnaji (i.e., Dada) makes me feel good.

Professor Krishnaji: A Great Scientist and a Great Human Being

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I joined Professor Krishnaji's Microwave Research Laboratory (MRL) as a research scholar in 1968; I left the laboratory in early 1973, after receiving my doctorate degree, to join the Indian Government Service. In those days, MRL was known the world over for its pioneering and indigenous efforts in microwave research, in terms of setting up the experimental research facilities, novel observations, and their interpretations to bring out the science behind them. Many leading scientists and research scholars, both from India and abroad, when visiting Allahabad University, never missed an opportunity to visit MRL. The air-conditioned laboratory with stimulating scientific environment made that Laboratory a very special one. I had been Professor Krishnaji's student both at graduate and post graduate levels and I was a part of MRL.

When I joined the Jet Propulsion Laboratory, USA, to work as NRC (National Research Council) Senior Resident Research Associate in 1980, I spotted MRL Research Report at JPL's microwave laboratory and I was thrilled to see that it was consulted by many scientists in that laboratory. The MRL has produced a record number of PhDs and scientific papers in peer reviewed journals and all the students have occupied many important positions both in India and abroad. Prof. Krishnaji is regarded as one of the pioneers of

Microwave Research in India.

Besides being a great teacher and researcher, Professor Krishnaji was a great human being. He was perhaps born for the students. When I was completing my PhD and my thesis was in advanced stages of typing, I had to slow down since I did not have the money required by the University for submitting my thesis. Professor Krishnaji came to know about this and he called me in his office and handed over the cheque and asked me to pay the University the required fees and submit the thesis to the University.

Tea-time was one of the great features of Prof. Krishnaji's Laboratory. That time he used to utilize to know from every research scholar and the supervisors the latest that was happening in the laboratory and elsewhere. He always encouraged us to work as a team and help each other. Once a student Mr. A.V. Rao from Andhra University came to the microwave research laboratory (MRL) of the Physics Department to work on dielectric measurements; we were told to help him and give priority to his work. Initially, he came to work on few samples for few weeks, but he was so fascinated with the work culture of MRL that he was allowed to complete almost all his thesis work in Prof. Krishnaji's Laboratory. That was the greatness of Professor Krishnaji.

I am now an Emeritus Professor at IIT (Kharagpur) and was the former founding director of the NCAOR in Goa. Whatever little I have accomplished in my career, it is all due to the blessing and the seeds sown by Professor Krishnaji and many of his illustrious students. Some of his students were also my teachers. To name a few: Suresh Chandra, Shyam Lal Srivastava, Vinod Prakash, Pradip Kumar, Gopal Krishna Pandey, Suresh Chandra Srivastava, Suresh Chandra Agrawal and Vinai Krishna Agrawal.

For us Krishnaji is immortal.

A Tribute to Professor Krishnaji, an Academic Colossus

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Paying tribute to the great academician Professor Krishnaji, Professor of Physics, and Ex Pro-Vice Chancellor of Allahabad University, is a humbling experience for me since I genuinely feel that I am too small a human being to describe his scholarship and sterling qualities. Words cannot do justice to the multi-faceted dimension of his unique personality. He was a university teacher *par excellence* who will always be remembered for his pioneering and seminal work in the field of *microwaves*. In fact, the Microwave Laboratory developed and installed by him at Allahabad University was the first of its kind in India. In recognition of his contribution to research and higher education in the field of science, he received the prestigious Sir C.V. (Chandrasekhara Venkat) Raman National Award. He was also a visiting Professor in Australia.

Krishnaji was not only a learned academic, but had the acumen of an administrator. He had an extraordinary personality that included a fine blend of these qualities. Thus, in addition to carrying out beautifully his academic commitments, he excelled in the field of administration as he steered Allahabad University successfully through turbulent times in his capacity as the Pro-Vice Chancellor of the University.

I recall, with reverence and fondness, my memories associated with this great personality. I joined Allahabad University as a research scholar in 1970 under his supervision. After obtaining a PhD degree in 1976, I continued post-doctoral work under him for the next two years till I joined the National Institute of Technology at Jameshpur in 1978. In February 2009 I joined Gandhi Engineering College,

Madanpur Khurda, Bhubaneshwar as its Director. Krishnaji was a father figure to all the students and scholars who came under his gentle and kind influence. I was fortunate to receive his affection and blessings. In fact, during my early days as a research scholar, I had the privilege of staying with him as one of his family members since I could not get accommodation in any hostel. I continued to enjoy his warm and fatherly concern throughout my stay at Allahabad University. I cannot forget his role in molding my personality and his contribution in my academic achievements. He has been my inspiration and a role model.

It is my firm belief that what I learned from him will continue to guide me in the future, especially in moments of crisis, doubt and uncertainty.

Professor Krishnaji – A Great Visionary and His Contributions to the National Academy of Sciences, India

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After having obtained the degree of MSc (Physics) in 1970 from the University of Allahabad, I was fortunate to get myself enrolled for the degree of DPhil in Science in the Microwave Laboratory of the Physics Department of University of Allahabad under the able supervision of Prof. Suresh Chandra Srivastava, who himself had been a student of Prof. Krishnaji (from here on, I will use his name without the title). Thus, I consider myself a *grand student* of Krishnaji.

Krishnaji, with his singular devotion and dedication, had established the Microwave Laboratory in 1950 for research in the field of microwaves. Although in 1973, he had been appointed the first Pro-Vice Chancellor of the University of Allahabad, yet he would snatch time from his busy schedule to look after the progress of the research work of students of the microwave laboratory. I also had the good fortune of having his able guidance in the pursuit of my research work. He had such a clear insight about the functioning of intricate instruments that whenever we approached him with some problems in the experimental set-up, he, without visiting the instrument, would suggest the remedy. Such was his elegant and deep understanding of instruments and instrumentation.

Krishnaji's depth of knowledge and versatility always left a lasting impression on others. Above all, his simplicity, absence of pomp-and-show and humane but elegant style will always be remembered. He always felt concerned with the welfare of personal and family life of those who came in contact with him. I remember

several occasions in which he participated in the post-marriage celebrations of some of the members of Microwave Laboratory and blessed the newly married couples. He possessed the rare gift of making and seeing others happy. He was, by every measure, an extraordinary man.

After his formal retirement in 1982 from the University of Allahabad, Krishnaji devoted his full time and attention towards the affairs of the National Academy of Sciences, India. Since then the Academy has undergone tremendous changes towards its development.

In 1967, Krishnaji had been elected a Fellow of the National Academy of Sciences, India (FNASc) at the young age of 45.

When I joined the National Academy of Sciences, India as the Assistant Executive Secretary in 1985, I had the opportunity of interacting frequently with him who was then the Treasurer of the Academy. His analytical approach to do things and transparency in dealing with others made him distinct from others. Throughout his life he never seemed to lose the ability to make the right decision.

During 1977-1980, Krishnaji served as its General Secretary (Head Quarters). Under his able leadership as the General Secretary, the Golden Jubilee Session of the Academy was held during October 23-27, 1980, at Allahabad in which the then Prime Minister of India, Shrimati Indira Gandhi was the Chief Guest. The Session was attended by several foreign academicians besides those from India. The Session was also addressed by the Patron of the Academy, Shri Chandeshwar Prasad Narayan Singh, Governor of Uttar Pradesh, Prof. Syed Nurul Hasan, Vice-President, Council of Scientific and Industrial Research (CSIR), New Delhi and Prof. Mambillikalthil Govind Kumar (M.G.K.) Menon, Secretary, Department of Science and Technology (DST), New Delhi. Prof. Neel Ratan Dhar, the senior-most Past President, thanked the Prime Minister of India on behalf of the Academy at this session.

On this occasion Krishnaji had also organized a three-day Symposium on '*Renewable Sources of Energy*'. The Symposium was inaugurated by Prof. M.G.K. Menon and was attended by about 100 participants. A comprehensive key-note paper on 'Energy Policies and the Contribution of Renewable Energies in India' was presented

by Mr. Maheshwar Dayal, Adviser, Science and Technology, Government of India. During the Golden Jubilee year, the Academy also started a Golden Jubilee Fund and made plans for widening the activities of the Academy and adding to its present building.

Krishnaji has made significant contributions to the affairs and development of the National Academy of Sciences, India, as its Vice-President (1981-1982), General Secretary (1977-1980), Treasurer (January 1984 – May 1987), Foreign Secretary (1983) besides serving in the Council as its Member for several years. During 1974, he delivered the address on ‘*Shape of Microwave Spectral Lines and Molecular Interactions*’ as the Sectional President of Physical Sciences Section of 45th Annual Session (November 8-10, 1974, Bhagalpur University, Bihar, India). He has also served on the Editorial Board of the Proceedings of the National Academy of Sciences, India (Section A – Physical Sciences; 1967-1977; 1995-1996). He was the Guest Editor along with Prof. Suresh Chandra of the Special Issue on ‘*Chaos, Disorder and Fractals*’, published in 1996.

In December 1983, Krishnaji organized a National Symposium on “*Science and Technology Policy of India*” (a) to discuss all aspects of Science and Technology Policy of the Government of India, including their impact on different sectors of national development and activity, and (b) to focus the attention of the Nation and the Government on its achievements, failures and appropriate corrective measures. Its recommendations have been well received.

For some time, the Academy had been feeling the necessity of a monthly Journal for quick publication of brief reports of original research of immediate importance. It was when Krishnaji was the General Secretary of the Academy, “*National Academy Science Letters*” was first published in January 1978: the Academy had taken an important step forward to serve the cause of scientific research under Krishnaji’s leadership. The Late Prof. Neel Ratan Dhar, the then Director of the Sheila Dhar Institute of Soil Science, University of Allahabad, had released the first issue of the National Academy Science Letters. The publication of this monthly journal has been widely appreciated by the scientific community for speedy publication of brief reports of high quality research of immediate importance.

To commemorate the memory of this great visionary, an award lecture known as Prof. Krishnaji Memorial Lecture Award has been instituted by the Academy out of an endowment created by his student Prof. Abhai Mansingh, a Fellow of the National Academy of Sciences, former Professor of Physics and Astrophysics and Director of the South Campus of the University of Delhi, and a renowned physicist in the field of Electronics and Solid State Physics.

Currently, I am the Executive Secretary of the National Academy of Sciences, India. We shall ever remain indebted to Professor Krishnaji for his visionary contributions to the prestigious National Academy of Sciences, India.

* The editors are grieved to note that Dr. Mohan Swarup Sinha died on 30 December, 2009 due to a fatal heart attack while returning after a long morning walk.

Part B

Recollections of Dada and Bhabhi



by
Family Members

Family Members of Krishnaji

1. **Grandfather** (father's side: Baba): Ganga Prasad Asthana*
2. **Granduncle** (grandfather's brother): Saraswati Prasad Asthana*
3. **Father** (Babuji): Vishveshwar Prasad*
4. **Mother** (Amma): Savitri Devi*
5. **Younger brother** : Gopalji
6. **Sister**: Malati Sahay
7. **Youngest brother**: Govindjee
8. **Wife**: Bimla (Asthana)*
9. **Sister-in-law** : Nirmala (wife of Gopalji)
10. **Brother-in-law** : Radha Krishna Sahay (husband of Malati Sahay)
11. **Sister-in-law**: Rajni (wife of Govindjee)

Note: We are not aware of Krishnaji's grandmother's name; also, we don't have information on his Nana and Nani (grandfather and grandmother on his mother's side); his father had one brother: Har Prasad, and two cousins: Bireswar Prasad and Sidheshwar Prasad sons of Saraswati Prasad Asthana. Information on the extended family is not included in this book.

Krishnaji* and Bimla*

1. Eldest daughter: Ira Chandra (Meenu); husband: Suresh Chandra; son: Sunil Chandra (Sunil's wife: Elfi Chandra; son: Rowan); and daughter: Neera*
2. Elder son: Deep Ranjan* (Deepak); wife: Madhulika (Madhu); son: Soubhagya Deep (Monu); and daughter: Priyanka (Pinki)

3. Younger son: Raj Ranjan* (Ranjan); wife: Purnima (Poonam); daughter: Tanima; and son: Sanket
4. Youngest daughter: Chitra Kumar; husband: Satyendra Kumar; daughters: Garima; Tripti; and Shruti; Harbinder Barring (husband of Garima)

Gopalji and Nirmala

1. Eldest daughter: Manju Saxena*; husband: Randhir Saxena; sons: Rajya Ashish*; and Rajya Vishesh*
2. Middle daughter: Rita Shekhar; husband: Shekhar Sinha; daughter: Nandini (Ninni); Tanu Bhatnagar (husband of Nandini; daughter: Aanika); and son: Nitin
3. Youngest daughter: Ila Varma; husband: Avinash Varma; daughter: Isha

Malati Sahay and Radha Krishna Sahay

1. Eldest daughter: Anju Okhandiar; husband: Ashok Okhandiar; daughters: Neha; Richa; and Ambika; David Philip Gunn (husband of Neha)
2. Elder son: Anshu Sahay; ex-wife: Manisha; sons: Tanmay; and Mayank
3. Younger son: Anupam (Anat) Sahay; wife: Shilpi Sahay; sons: Anav; and Apurv

Govindjee and Rajni

1. Daughter: Anita Govindjee (Christiansen); husband: Morten Christiansen; daughter: Sunita
2. Son: Sanjay Govindjee; wife: Marilyn Govindjee; sons: Arjun; and Rajiv

* Deceased

Recollections of Dada, my Older Brother— Late Professor Krishnaji

(January 13, 1922—August 14, 1997)¹

Gopalji

H37/2, DLF, Qutub Enclave, Phase I,
Gurgaon-122002, Haryana, India

Telephone (mobile): (91) 9818430298

Dada, my brother Professor Krishnaji, left us a decade back. I lost not only my brother but a friend, a philosopher and a guide; I felt rudderless since he had guided our lives as kids, as adults, and even in my retired life. He kept track of every member of the family, including my 3 children since they were born. He followed their progress during their school days, when they were growing and even after they were married. A vacuum was created after his death in 1997, which is difficult to fill; there is no one to run to for advice in normal and difficult situations. His appreciative smile or stern look gave away his *Yes* or *No* on matters of our interest; thus, we followed him meticulously without hesitation and our lives sailed smoothly. He was a Prince among us, a glittering symbol of values that helped us to shape ourselves in our individual professions. A simple expression by our cousins during his lifetime “We wish we had a brother like *Dada*” shows how well he was regarded in the extended family.

Prof. Krishnaji started his career as a teacher of Physics at Allahabad University- an institution of legendary repute- after completing his Master’s Degree (MSc) in first division. He distinguished himself as a great teacher, research scholar and a perfect human being. He carried a magnetic aura around himself. The students, researchers and colleagues who came in his close contact exuded love, affection and regard for him. One of his students, Prabhat Kumar, who was later a Cabinet Secretary in the Government of India

told me “I first used to sit in the front bench of his class. His lectures were lucid, and clear on very difficult and complicated subject. I felt it was a piece of cake, but when writing it down at home I found I should have raised questions during the lecture. I then decided to be a backbencher in order to be away from his personal magnetic influence, which helped me to be a better student, raising doubts and learning the fine nuances of the subject...” I do not know if this was a compliment or otherwise, but proved to me the existence of Dada’s personal aura. His metal as a great teacher and a scholar is established throughout India and abroad, where his students are spread out fulfilling their dreams of success. (See Part A of tributes to Dada.)

Remembering *Dada* in bits and pieces is a great task for me as when I close my tearful eyes, the full gamut and spectrum of our lives together flashes before me like a fast movie, in spite of failing memory of an eighty three year old man. As the memory lane is very crowded, my efforts to pick up the threads for presentation to you may not be perfect. What follows is not a chronological account, but I weave in and out as thoughts come and go.

When we were children

Way back when I was probably a four year old kid, and Dada was nearly nine year old, we thought of playing a ball game. At the ends of our verandah, we started rolling a tennis ball to each other, sitting in a not-so-normal posture. We went down facing the wall and threw the ball to the other end between the legs to be caught by the other person in the same posture and repeated the process. If the ball rolled straight, it was caught and thrown back; after a couple of rolls, my ball went skew and Dada tried to catch it bent in the same way, but he slipped on his right shoulder. He was hurt; he broke his collarbone, and was in pain. I rushed to our mother (*Amma*)²; the servants, realizing the seriousness, took Dada to a doctor for bandage with a splinter wood. I knew it was my fault and was very apologetic, but he took the blame accepting it as his carelessness. Dada’s forgiving nature was etched in my psyche from that early period of our lives.

Dada used to entertain us to keep us happy under all circum-

stances as a leader of the small group of four (that included Malati, my younger sister, and Govindjee, my younger brother). Once we were living in a first floor apartment in a crowded locality. Our outings were, thus, restricted. Dada devised a game to make us feel as if we were traveling around India. An iron chair was brought in the hall and turned over on the floor with its seat vertical and its back horizontal, providing sitting space for the driver and cross bars with a pillow for the passenger. He would make one of us a passenger and himself a driver selling tickets and turning the chair around taking the vehicle to Delhi, Bombay (Mumbai), Madras (Chennai), Calcutta (Kolkata) and back to Allahabad while some one at the halt called out as a hawker of tea and snacks in a local dialect (*Chai Garam, Ubla Anda, Jhalmuri*); so we all had fun together with our leader Dada.

When we were a bit older we were allowed to go to the movies with Dada as our chaperon. The first movie I saw was “*Achhut Kanya*” with Ashok Kumar and Devika Rani in leading roles. Instructions were clear as to where to sit so that one could come out prior to the rush of the people at the *Exit*, avoiding any stampede. Such was our protective and caring Dada from day one.

*Amma*² used to change houses on the slightest pretext, say when any member of the family remained sick for a long period or some piece of gold was stolen. Once we landed at a place, where a railway track passed by with resulting noise at regular intervals of the rolling of wagons and engines. We all were cribbing about the choice of the house, cursing the discovery of loss of gold jewelry. Dada would then tell us a joke (not meant to offend anyone): “Listen: a Sardarji had similarly decided to rent a house by the side of a railway track. He was told by the owner of the house that the railway track was the only defect of the place; however, after a *few days* there would be no problem to anyone, Sardarji paid the advance money, saying I will come back and live after a *few days*.” The joke at first slipped over our heads, but soon we started laughing and forgot our complaint. Later I realized that Dada remained cool under all situations: no complaints in life. One of his students who attended his seminars

some forty years ago was remembering him as a “Smiling Buddha” answering queries with unusual discipline in the gathering. He was a happy man, radiating good will for all around him, encouraging individuals to achieve excellence in the field of their specific interest (even a game of cricket in a class of Physics).

School and College Days

Talking of games during school and college days, Dada and I played badminton. Going to the school field was not easy; when we would return from the premises, we would find an open space and create our own court – a task in itself. Dada had a senior friend who organized the same for us. He was also a photography buff and had a dark room in his house for developing films, also making positives on photo paper. We had fun. Dada’s school and college days passed without problems. He was studious and scored excellent marks. *Babuji*² (our father) never had time to enquire about our progress. Once he did find that Dada needed some coaching in Hindi for his 10th class (grade) examination; Babuji arranged it immediately, and that was the last time when a tutor at home was required for Dada. He used to play ‘Chess’ and was pretty good at it. We had a neighbor friend who always got beaten by him; in fury, this friend would turn the chess board upside down and throw all the pieces on the floor. We, as onlookers, had a great laugh. Dada remained at peace, self possessed and remained truthful to the rules of the game. I also learned the game of chess but was not good at it. Dada could plan out his moves as well as his opponents much in advance. His qualities of remaining unruffled and comfortable in the games were also transferred later in all phases of his life.

Babuji had a *stroke* when Dada was in the college in his 12th class. We all felt a bit insecure; slowly, Babuji recovered and returned to normal life and work. I have a hunch that there was a change in Dada’s future plans since he told us that after completing the college, he would like to take up a job or join a technical training institute so that he will be assured of an employment soon after. Babuji, being of scholarly nature and attitude, was firm in sending him to the

University. Babuji's profession² was such that professors of English in the university were on friendly terms with him. Dada's college score marks were fairly high and he got admission in BSc (Bachelor of Science) with Physics, Chemistry and Mathematics. Muir College—the Science College of Allahabad University — was a citadel of learning in those days where professors were of very high caliber and a few were prestigious members or Fellow of the Royal Society of London, UK. The academic environment was bereft of any politics and pursuit was pure academia oriented.

Coming back to my remarks on Dada, about his thinking of employment by cutting out further University education, we felt that he wanted to take the responsibility of the family at a tender age because of Babuji's frail health. That kind of highly responsible behavior affected Babuji and he did tell him "Young man you will go a long way and I have no fear in 'switching off' any time leaving the whole bunch in your safe hands." That did happen nearly four years later, just a couple of months prior to Dada completing his Master's Degree (MSc in Physics). Babuji breathed his last on December 3, 1943. We all put our heads on Dada's shoulders and sailed along our way. His sense of responsibility towards us all and to all those who came in close contact— relatives, students and friends — is a memorable *Gita* for each one of us.

Turning to Dada's joining the College- Ewing Christian College, Amma bought him a bicycle (brand: *Hero*) for 35 rupees, a substantial sum then. I was very happy as I could piggy back with him and he too was happy to take us around. Our usual visits were to a pond to play *Chhichhli* and to a guava orchard for buying and picking fresh fruits. These still remain as memorable childhood days. For those who have not played *Chhichhli*, let me explain: One takes a flat piece of a broken tile and throws at the water surface keeping it parallel to it so that it touches the water and moves on touching the water again several times. One whose tile piece reaches maximum distance before getting lost in the pond is declared the winner. The tile piece is called *Chhichhli*. Playing marble and collecting them was a passion of ours. We claimed we were masters at the game though not really so. These

memories lead me to believe that we did not miss much of any fun in our childhood days, in spite of our parents not participating totally—their place was taken over by Dada very early in our lives.

Dada's bicycle had a special place in my life as I had taken a promise from him that when he would join the University, he would take me along to attend my school – KP (Kayastha Pathshala, now Kali Prasad) College – which was on his way. He kept his promise without being reminded even once. How one can forget a brother like him, who was more of a father figure than a competing sibling.

This bicycle was responsible for our initiation into Industrial India before Independence. We went with our cousins across the Ganges River (*Ganga Nadi*) to a sugar factory; it was a great picnic for us. We saw the entire process right from the crushing of the sugarcane, filtering of the juice, boiling it, converting molasses into white sugar crystals by high speed centrifuges, and finally automatic weighing of sugar in their gunny bags. I had no idea then that later in life I will be handling large capacity sugar projects all over independent India as a General Manager of a government organization.

Bicycles came to us as a boon as individual independent transport. Dada got a top range *Raleigh* bicycle at his marriage. I bought a *Hercules* bicycle at the start of my career as a lecturer at the college where I had also studied. I added a cane basket and hung it in the handle for bringing fruits, vegetables and medicines for Amma. The basket was useful for carrying college books and notebooks of the students whom I taught. It was a great exercise which people use now in a stationary form. Even Prof. K.S. (Kariamamickam Srinivasa) Krishnan, FRS (Fellow of the Royal Society) and Head of Physics, Allahabad University, used his bicycle riding around a track in the Alfred Park (*Company Bagh*) near Muir College. The word College again reminds me of Ewing Christian College where Dada spent his formative days. The Christian College was a part of a chain of institutions run by an American Missionary all over India. Most of the large cities like Lahore, Karachi, Lucknow, Allahabad, Patna and Calcutta (Kolkata), and other metropolitan towns like Bombay (Mumbai) and Madras (Chennai) had established Christian Colleges.

The quality of dedicated teachers was remarkable; quite a few were from USA, specially the Principals. The buildings, the playing fields and the water sports were extra attraction. Moreover, the co-educational pattern introduced in a conservative society of India was unique for us, though very few families sent their girls to such a college in Allahabad. Dada was a very handsome person; friends used to tease him by “linking” a girl in his class, who probably used to throw slanting glances at him. However, he was one of the simple folks glued to his studies and family that he never had the opportunity to come across any girl near him like that.

Looking back to the story of bicycles in the family even when we graduated from the two wheelers to four wheelers, we never left our old friend (*Dost*) knowing the harmful potential of a sedentary life. Often, in the Indian scene the steering wheel of four wheelers are left to the care of the chauffeurs (drivers) keeping us out of the focus from roads, making us laziest of the lot; we remain busy reading newspapers, office files or now working on the laptops. Dada never bought a car— he either used a bicycle or a cycle rickshaw when *Tongas* (horse-driven carriages) went out of fashion till the university provided him a car when he took over as Pro-Vice Chancellor of the Allahabad University. He was a very simple man; he never made any fuss about dress for himself though he enjoyed giving and appreciating good dresses for us all. Let me end the subject of bicycle by telling you that Rajni (wife of Govindjee) used a bicycle for many years at Allahabad (not very common for girls in that town). Let other girls young and old take a cue from Rajni. Today, I learn that Dubai is providing cycle tracks in certain areas like European cities for its beneficial health and environmental effects for the society.

Babuji was no more

The sudden passing away of Babuji in 1943 terribly shocked us. The unknown breaking of thread of life was a turning point for the family. It looked as if Dada grew taller in a day. He did grieve within himself but looking at me, my sister Malati (Bitti), the youngest Govindjee, and my mother lying unconscious, he took over the reins in his rather young but surely strong hands to steer clear of any further

calamity falling on us. I was just going to complete my 12th class and Dada his Master's Degree in Physics. A thought passed through my mind that as Dada wanted to take up a job or join a technical school for ensured employment, I may do the same after getting through my 12th class, in a couple of months, to add something to the kitty of the house. We five were moved to a room in the newly built house of our only uncle Har Prasad – younger brother of Babuji —who had only one son (Keshav Bhai, Krishna Murari), who was older to me. (Sadly, Keshav Bhai passed away in 2009.) We lived there for a few months but Amma was not comfortable as she could never get along well with our aunt (Chhoti Chachi, or Park Road *Wali* Chachi).

Dada's appointment at Allahabad University; Dada's marriage, and other thoughts

As luck would have it, Professor Amar Nath Jha, the famous Vice Chancellor of Allahabad University, on knowing about his friend's (Babuji's) death called Dada as he had obtained first division in his Master's examination. Prof. Jha told Dada to join the faculty with immediate effect. Prof. Jha was a very charismatic person and a powerful administrator; only he could take such decisions on the spot. This act of providence put our life back to normalcy; otherwise, there were arguments between Dada and Chacha about who among us, I or Bitti, should continue education. Dada was firm that both Bitti and I would study further, but Chacha had his own ideas. I could get convinced by either of their ideas, but Dada explained to me as follows. He asked me: Have you ever heard lawyers arguing a case in a court? It is their *forte*; do not listen and care, just be ready as a good Boy Scout to do your heart's calling. It ended our procrastinations and we left Chacha's place after finding a neat, rented home in a decent environment in the Civil Lines area of Allahabad (3 Cawnpur (later Kanpur, now Purushottam Das Tandon) Road) owned by a lawyer friend (Mr. Vishun Nath) of Babuji. It so happened that this gentleman's father was a clerk in the court of my grandfather (Ganga Prasad Asthana²) when he was a judicial officer in a *mufussil* (a suburban town) of Orai in the United Provinces, now Uttar Pradesh (UP). Vishun Nath's second son (Sri Dhar) was a class mate of Dada

in BSc Classes. Thus we ultimately found a pleasant climate after a brief traumatic period.

Dada got married from this house to a lovely lady our Bhabhi (Bimla) on July 7, 1946. His criterion for a life partner was one and only one that she will keep the family of three 'brutes' and Amma together intact all times to come. Dada's marriage to Bhabhi, Bimla Devi, for me is a fairy tale. Dada was working as a Lecturer in Physics at the University of Allahabad; he was a handsome person, a descendant of an old elite Kayastha family of Banaras (now Varanasi), a pilgrimage town for all Hindus. He had several matrimonial proposals from known families in the community and the University circle. It so happened that the owner of our rented house (Shri Vishun Nath, known to our grandfather), at 3 Kanpur Road, had a visitor looking for a groom for his niece. Mr. Nath casually suggested Dada as a possible groom and gave the background of the young man and his family. The visitor Shri Krishna Chand, District Judge at Allahabad, was the uncle of our would-be Bhabhi. He requested Mr. Nath to arrange his meeting with Dada. As neighbors, we were called for Tea at Shri Vishun Nath's sitting room; we chitchatted with the visitor. Judge Sahib was so impressed by Dada's demeanor, tone and tenure of his talk that he went straight to our uncle Shri Har Prasad at Park Road, as he was the nearest elder male member of the family to consider the proposal of Dada's marriage. It was agreed that we all would meet the girl at a holy spot, say a temple, in the presence of a holy man by the side of a holy river; so we went over to the Guruji of Barhe (Big) Hanumanji; the statue of Hanumanji is in a horizontal pose, lying on the banks of Sangam (Triveni), the confluence of the rivers Ganga, Jamuna and the invisible Saraswati. The holy man and the holy atmosphere blessed us all and soon thereafter we brought the fairest of fair fairy (Bimla) to our little home. We were all excited and delighted to have an addition to the noisy pack of brutes. Govindjee, still a baby of the house, was made to learn to behave. There was a stream of visitors and sweets to go around. Slowly the hubbub settled down and the routine of school, college and University took us over.

Our late Bhabhi (who sadly passed away on April 18, 2007) fulfilled Dada's mission of life wonderfully well. I salute both of them when I recollect the smallest of incidents in our lives. My BSc Final exams were coming close and I developed a boil on my cheek. It was an abscess and it was very painful to me. Amma would not let the family doctor put an incision to drain off the pus. A 'poultice' was packed on the face; there was more pain, and no sleep; and you know who was there to take care through the nights? – No one other than Bhabhi. I can go on filling pages with her dedicated care and sacrifices for all of us; her motherly attitude towards us was great for us. I was called *Babu* by her and I remained the little Babu throughout her life. Bitti and Govindjee were younger, and had surely better reasons to be looked after. Their contributions to this subject would be much more meaningful.

Our saga of growth under the benign shadow of the duo, Dada and Bhabhi, is an epic by its own standards. Our voyage onwards is stranger than fiction. Those left nearly orphans, with no support from uncles or godfathers, stepped out of gory darkness in brighter light—slow and steady. Dada emerged as a grand teacher in the Faculty of Science, of Physics at the University of Allahabad; he was respected and adored by his students as well as by a team of research scholars on the subject of Microwave Spectroscopy that Dada had helped pioneer in India. (See Part A of this book of tributes to Dada.) His newly established laboratory bubbling with activity was his heart and soul. He knew his equipment in such knitty-gritty details that he could guide the students working in the basement while sitting in his second floor office; he could remove any glitches faced by them through phone or when the students came to see him. He was fluent in both English and Hindi, although the latter was once his weak subject. He delivered lectures and wrote scholarly papers, in both the languages, on subjects of academic interest, sometimes leaning towards philosophy. A lifetime service award, for his Science, the Sir C.V. (Chandrasekhar Venkat) Raman award, was bestowed upon him by Mrs. Indira Gandhi, the then Prime Minister of India (Part C, Fig.3). His first laboratory of "Experimental Microwave Spectroscopy" was inaugurated by Pundit Jawaharlal Nehru, the first

Prime Minister of India (Part C, Fig. 1). This took place when Nehruji was there to declare open the Technical Wing of the Physics Department of Allahabad University, which had started awarding BTech degrees.

Later, Dada's stint as an administrator, i.e., as a Pro-Vice Chancellor, has its own success stories. On his retirement, his name and fame brought him in contact with Maharishi Mahesh Yogi, a world-renowned teacher and practitioner of Transcendental Meditation (TM), who passed away in 2008 at the age of 91. Dada was requested to join him to establish a Vedic University in India, which nearly came into existence but for the serious illness of Maharishi; further, due to his departure from the Indian scene to Europe, this mission remained unfulfilled.

A few things about Dada's siblings

The next academic wizard among us is Govindjee, who after getting top position in his MSc in Botany from Allahabad University (1954), joined as a Research Scholar and a Lecturer at the same University. However, within two years he sailed to the USA on a Fulbright Grant and a Graduate Fellowship in Physico-Chemical Biology at the University of Illinois, Urbana, Illinois, to work with Robert Emerson and Eugene Rabinowitch, two founding fathers of photosynthesis research. Urbana, Illinois, has turned out to be a permanent home for him and Rajni, his life partner. He obtained his Assistant Professorship in 1961 (from my perspective at a very young age of 28); he became a Full Professor in 1969, and today, after his retirement in 1999, he is one of the topmost respected scientists in the world of 'Photosynthesis Research'; his website (<http://www.life.uiuc.edu/govindjee>) gives further details.

My sister Bitti (Malati) is equally an achiever. She obtained a first division in BA (Bachelor of Arts), from Allahabad University; it used to be a rare result in the Arts faculty. After her MA in Hindi, subject of her choice, she married a classmate Radha Krishna Sahay and shifted to Bhagalpur, Bihar, where both excelled as Professors of Hindi: reading, writing and teaching, not only in India, but in

Germany; they were for several years at Humboldt University in Berlin, then in East Germany.

I did not consider myself very bright; Willy Nilly, I completed my Master's Degree in Physics from Allahabad University. Later, I felt I was in the wrong field; so, I changed my field. Anyhow, at that time, I started teaching undergraduate classes. My mantras were 'Catch the Bull by the Horn' and try to make the best out of the opportunity that comes across.

I had a year to my credit of research work on 'Absorption of Ultrasound waves', but probably my heart was somewhere else. At the first chance I had, I left for the USA to study Business Management and after completion of my Master's degree (in Business Management, University of Minnesota at Minneapolis), I returned to India and joined the growing Public sector undertakings in India and retired as an Executive Director of Engineering Projects India, Ltd, a Government of India enterprise.

The next generation: first child was born

The year had nearly passed by when the news came of the arrival of a "bundle of joy", a baby doll, throwing us in an ecstatic mood. We bought a cradle, draping it with colorful sequined cloth stitched with *janglers* heralding Mini's (Meenu's) entry into the home. The name Mini was given by the neighbor, a classmate of Dada, she being a miniature fairy. The name changed to Meenu, I do not remember when and how, and then to her formal name Ira. Could it be that Bitti (Malati) had found it out of her classical books with some exotic meaning? All the same we had a thrust of happiness, everyone doting around her bringing lovely clothes and toys almost on a weekly basis.

Birth of a girl child is considered a good omen as within *Padarpan-entry* of Laxmi, the goddess of prosperity and wealth. Dada got his confirmed permanent position at the university, along with a decent raise in his salary. I, a few months later, became an earning member in the house. Dada was busy as usual in his research projects, developing his team of students and scholars. He had the finest asset of turning normal students into great researchers like a sculptor

chiseling raw stones into beautiful figures, and then blowing a part of his soul into them. And then he would give blessings to them so that they could pursue their own dreams. (See Part A of tributes to Dada.)

Independence from the British in 1947

The year of Nineteen Hundred and Forty Seven (1947) placed us all in a different channel. The shroud of pessimism was replaced by optimism. On August 15, we were a free people: India was finally Independent. Dada declared to us “*You all are on your way up –Take pride in your family character and not on material gains (if any left by “them”). Depend solely on your intellect, diligence and faith in the goodness of human being. Rest, leave to the Almighty*”. What he preached he practiced. Our home was now the hub for our relatives, friends and the community to which we belonged. It was an *Open House* all the time. People walked in and out and stayed for long periods without hesitation. Cousins, and other near and distant relatives, arrived for help for multitude of reasons. My grand uncle Munshi Bhagwan Prasad, whose father Munshi Kashi Prasad was contemporary of Pandit Moti Lal Nehru, father of Pundit Jawahar Lal Nehru (the first prime minister of India) had lived a lavish life out of the money and estate built and left by his father. At the fag end of his life, he moved from Banaras (Varanasi) to Allahabad and since he had no one to look after him, Dada invited him to spend his days with us. We all cared for him to the best of our capability in our *Open House*.

The next 50 years of Dada were like joining a juggernaut, sacrificing for all, caring and giving- first among those were Amma’s sibling’s relatives and friends. He had decided not to move out of Allahabad as Amma did not like to leave Allahabad (*Prayag* was the holy city). Dada lost many outside opportunities, but he never regretted. Dada’s time management was perfect. He could find time for everyone and earned a good living as well for us all, till we were on our way out one after another- first Bitti, next Govindjee and the last was my turn.

Bitti likened Dada to the legendary figure of Shravan Kumar because of his devotion and care for Amma² and I totally agree with her. Shravan Kumar, as the story goes, was a man, whose parents were blind and aged but wanted to visit all the holy places before leaving this world. They were poor – so Shravan Kumar put them in two baskets and carried the basket on his shoulders. When he reached near Ayodhya, the Kingdom of Dashrath, father of Lord Rama, it is said that the King accidentally shot Shravan Kumar with his arrow, while he was filling water from the river, mistaking him in the darkness for an animal drinking water. When Dashrath discovered his folly, he went to the blind parents for forgiveness –he was cursed to die with the pain of parting from his own son. Thus the epic Ramayana goes on. I have taken the opportunity to elaborate one of the characteristics of Dada’s soul of caring for the elderly. I am sure that whosoever came near him was affected by the purity of his soul.

I have a strong feeling that Rita, my daughter, who stayed with Dada while studying in the middle school in her impressionable age, received Dada’s radiations and absorbed them as she has this inbuilt capacity to be good. She is now sometimes teased as Shravan Kumari for the extreme care she bestows on us, surely in tandem with her wonderful husband Shekhar, and children Nandini and Nitin. God bless them.

Dada was way ahead of his times. He had possibly visualized the forthcoming setup of nuclear family systems; so, he desired to set example as to how to provide solace to the aged, disabled and feeble persons in the normal families; as such, senior citizens needing primarily emotional, physical and sometimes economic support in the inflationary economy of the world. The developed nations of the world have created social security laws plus physical care services but emotional support is atrociously daunting to organize. Let us hope that as mankind evolves, Dada’s dreams will be fulfilled.

A few things about the marriages of Dada’s siblings

A few incidents, connected with the marriages of us three younger to him, need to be told for the sake of his cool cucumber like

temperament. First, comes Bitti's wedding. In our days of fairly conservative old traditional families, it was odd to find that the girl selects and decides to marry a guy whom she has started loving while studying together. When this was revealed, the elders got a shock but not Dada. He quietly possibly talked about pros and cons of the decision but later agreed to go ahead with her liking of the young man—Radha Krishna Sahay of Chhapra, Bihar. Dada made it look like more of an arranged marriage. He went to Chhapra with the usual all necessary incumbent requirements of a traditional marriage proposal and on its acceptance, he came back to fix an auspicious day and start preparations to receive a *Barat*. I do not know if horoscopes were tallied, but the marriage was performed, and the two are happily living together in Bhagalpur, Bihar.

A talk of my marriage was also simultaneously going on. Bitti, Bhabhi and Amma were keen to fix my marriage as early as possible to bring in a “substitute” (for lack of a better word) of Bitti in the house. I was in no hurry as I wanted to study further and get settled down a bit later. In view of Dada's insistence as well as of the rest of the gang, I acquiesced to the pressure from the combined force. (Obviously, everyone had liked the selected bride-to-be.) I recall only one little embarrassing occasion when Dada was put to test for his cool temper. At the “*Barat Ghar*” in Nathnagar (my in-laws' place), when I was getting ready for the *Barat*, I heard someone mentioning a certain ceremony where the son-in-law of the family of the bride has to put the head gear on the bridegroom (me), and he has to be ceremonially given some gift in kind and cash. Dada was not around; some people referred to it as if it was his duty to take care of this ceremony, and they indicated as if he was avoiding it. I quickly went over and told Dada; he felt sad about these comments, but with his natural calmness called up graciously the two sons- in- law of the bride's family to perform the ceremony and presented them the gifts in kind and cash as per tradition. My marriage had been performed after tallying the horoscopes and we have been living happily thereafter for the last 57 years.

Govindjee was married to Rajni, in 1957, when they were in

Urbana, Illinois, USA. Since they were graduate students, finishing their PhDs at the University of Illinois, they could not come to India until 1961. Dada was very happy that he married Rajni, who was also from Allahabad. He was very fond of their children Anita and Sanjay; he visited them when the children were young, and much later, he (and Bhabhi) attended Sanjay's marriage, with Marilyn, in Stanford, California. I pray to God for a long life for Govindjee and Rajni and the well being of their children (Anita and Sanjay), spouses of their children (Morten; and Marilyn) and grand children (Sunita, daughter of Anita & Morten; Arjun and Rajiv, sons of Sanjay & Marilyn). (See Part C for photographs of the families.)

Ram Kishan, someone to remember

In the context of the life story of Dada, one more individual 'Ram Kishan' played a significant role. We saw him for the first time when we went to Banares (now Varanasi), during the funeral of our uncle Sri S.P. Asthana; he had died pretty young under mysterious circumstances. Ram Kishan was of our age group, but no one knew his date of birth, including himself. He was the errand boy of our great uncle (Baba) Munshi Bhagwan Prasad (Asthana) and Dadi (our great aunt), and called by them as Kishna. He was treated as part of their family; Baba and Dadi had no children of their own. The devotion with which Ram Kishan served them throughout their life was unparalleled. Baba also reciprocated in equal terms. Whenever he bought new clothes for himself, he always did it for Ram Kishan also. During their annual travel to the hometown of Dadi, Kishna accompanied them and was treated with respect by the family members. Thus their lives were intertwined. The first shock came to Kishna when Dadi passed away. Dadi was the one who had arranged and taken care of his marriage. Kishna's wife would meet him only when he went to his village on holidays. His family in the village was taken care of by Baba. We would meet Ram Kishan whenever Baba and Dadi visited Allahabad. They had a pet dog 'Moti' who always traveled with them. Dadi would feed "Moti" with the best of the sweets, 'Motichoor Laddoo'. Ram Kishan was a very affectionate person, who had grown up in this wonderful environment.

When Baba became incapable of managing his property in Banares, as well as himself, he decided to sell the Banares houses, one by one and came to live with his nearest relative, our uncle (Chacha) Sri Har Prasad (an English teacher at the K.P. Inter College, and a practicing Theosophist); there Baba, along with Ram Kishan, was provided a room. I do not recall the reason why and when the two enquired from Dada, if they could come to live with us; it is said that Ram Kishan told Dada “ Babuji (Bhagwan Prasad) has no children of his own and you (Dada- Prof. Krishnaji) are the only one who can look after him”. This statement was enough for Dada to make all the arrangements for Baba to live with us till his death; he accepted them both, with open arms, and took care of them. At our home, 14 B Bank Road, Ram Kishan worked not only for Baba but our entire family. My daughters (Manju, Rita and Ila) were born during the same period. He looked after them, just as a grand parent. Everyone called him *Kaka* (uncle). The *Bahu Ranis* (Dada’ wife; as well as my wife) of the house gave him respect by calling him Kaka. One may say that all this was our culture and “*Sanskar*” inculcated by the aura of Dada.

When I left Allahabad for Delhi, Ram Kishan opted to come with me, his *Chhoti Dulhin* (my wife) and our 3 daughters. Ram Kishan lived with us for almost 30 years. Recalling his memorable services, I remember his love, affection and honesty. Dada always reminded me that Ram Kishan was not just an extraordinary person, but he has some soulful relations with our family. The rest is history.(See Part C, Figure 55, p. 190.)

Amma was no more

Days and nights passed, dusk and dawn followed each other, dusk swallowed the Sun and the dawn pushed it to spread light for a new day with the hope for a better future for all. Dada was invited for a year to be a Professor at Jodhpur University to establish the Physics Department as the University was then recently created. He accepted the job reluctantly as it implied maintaining a second establishment, leaving the family (Bhabhi, children and Amma) at 14 B Bank (Ram

Narain Lal) Road, Allahabad. It was one morning in the month of February, 1966, that I arrived in Allahabad on a business tour. As I entered the house Bhabhi came and said “Babu- look at Amma: she does not seem to be normal.” I straight away went to her side and tried to feel the pulse: it was completely missing; I kept my palm on Amma’s chest: there was no movement; I put my fingers near her nostrils – no breathing. I knew then that she must have passed away quietly in her sleep. I was stunned as none of her immediate direct progeny (Dada; myself; Bitti; and Govindjee) were near her when she left this world. Dada, who had dedicated his life to her, was stationed far away. I told Bhabhi about the ‘Will of God’. She remained composed because all her four children (Meenu, Deepak, Ranjan and Chitra) were around. The servants and the maids started crying which upset the kids. I immediately booked a ‘lightning telephone’ call to Dada at Jodhpur. The communication system was poor and I could get him only at 10 in the morning. In the meantime, I informed Nirmala, my wife, at Delhi so that she, along with our three daughters (Manju, Rita and Ila), could come to Allahabad by the first possible train. They reached late in the evening. Friends, students of Dada and our relatives flocked the house. The only way to keep the body of Amma was to keep it on a slab of ice till Dada arrived.

Jodhpur was not very well connected with Allahabad by Air or by Train. At the earliest, Dada could reach after a delay of one day. A very close friend of Dada had gone to bring him home. It was a tormenting scene for anyone with a little heart when Dada arrived, and the car door was opened. Dada was crying loudly and sobbing like a child complaining of his fate as to why he had to leave Amma. To be honest I had never seen Dada crying in my life with such anguish. He rushed to the quiet lean body of Amma and cried his heart out. No one in the house had the courage to go near him and hold him. I, too, crying found some strength to clasp him and bring some calm in the torturous environment. Dada, although sobbing, took control of the situation and asked for the Pundit to start the procedures and prepare for the funeral. There were many people to bring Dada’s luggage from the car. Soon, thereafter, the frail body of

Amma was consigned to flames. That was the close of an era and the curtains were drawn for the new dawn. Anyway Dada always cursed himself whenever Amma was remembered in any context and that remained his lifetime repentance.

Life never stops and the show goes on. Thus, after our married lives, our families' growth had begun. Most of the names of our children have been mentioned above. To put them all together: Dada had four children—two daughters (Meenu and Chitra) and two sons (Deepak and Ranjan); I had three daughters (Manju, Rita and Ila); Bitti (Malati) had one daughter (Anju) and two sons (Anshu and Anat); and Govindjee had one daughter (Anita) and one son (Sanjay). (See pages 85 and 86 of this book.)

Dada was very fond of his youngest daughter Chitra and my youngest daughter Ila. During our stay in Kota (Rajasthan), he kept track of Ila and while passing on his visits elsewhere, he would make a stopover to see her. He loved my daughters immensely. Manju, my eldest daughter, took admission in the medical school for MBBS at Allahabad, staying at 14 B Bank Road. Rita also spent a substantial time with him and Bhabhi. Bhabhi was the God Mother as she was called by Nirmala; she was present during Ila's birth at Delhi. Manju and Rita were born at Allahabad; so, Bhabhi naturally took care of them. During my three year absence for studies in the USA, it was Bhabhi and Dada who held them near their hearts. Nirmala could study up to MA degree because both Dada and Bhabhi encouraged her education and coordinated all that was required to complete her studies. 'Hats Off' to the family and individuals for building up such a wonderful and caring family! (See Part C for photographs.)

Tragedies, one after another

It seems that happy and tragic moments of life alternate each other as Day and Night. My both elder daughters married happily and as usual Dada was on the forefront of all such occasions guiding at every step, organizing and participating to meet every requirement; many times I did not know what was going on in the marriage proceedings and I had to enquire and follow him. After Manju had

nearly completed her medical graduation, her marriage was performed in January, 1976, with Dr. Randhir Saxena of Lucknow. He had an MS degree in General Surgery and was intent on going to UK. After their arrival in UK, we visited them a couple of times. They had two sons. On both the deliveries, Manju suffered *Birth Blues*, which is a rare mental state which ignites suicidal actions. Sometimes after the second birth, Manju, sadly for all, killed herself along with her two young sons. Randhir was away at work and on reaching home, he could get inside the house with difficulty to find Manju and children dead: that was again another ‘Will of God’ (stated otherwise “*Bhagya Ka Khel*” (a Game of Destiny)) for me. The tragedy was unbearable. We were shell-shocked. When I informed Dada, he rushed to Delhi. My eyes were dry with horror and anguish. Dada was the only person in whose presence I could cry. When the bodies of our dear daughter and the two lovely grandchildren were brought from London, I touched them; they were ice cold: I cried loudly a second time, otherwise I presume my body would have burst open. Dada was the sole supporter and saved me from breaking into pieces. I still blame myself for not taking adequate precautions after the first indication of Manju’s disease. Religious scriptures say: one cannot change one’s life and its flow; whatever happens is all destined. Birth and death seems to be predetermined and one needs to take it as philosophically as one’s capability. Dada stood like a rock by our side in this tragic moment of my life and that of Nirmala; he remained the only source of our strength to face tragedies falling on us.

I now recall how tragedies in our lives shook us and how Dada held himself and us all; to us, he was a God- like figure breathing strength, hope and succor. Two tragedies followed in quick succession. Dr. Suresh Chandra and Meenu (Dada’s eldest daughter) had returned to India from Australia after ten years of stay there. They had settled down in Delhi; both their children (son Sunil and daughter Neera) were very bright and intelligent. Neera was growing up satisfactorily except that she had some kind of allergy to specific kind of nuts. She would get suffocating attacks under certain conditions for which the only relief was extra oxygen and a medicine to be injected; Suresh kept both the curative material handy to the extent that he could reach

them even in complete darkness. As destined, a neighbor had returned from Switzerland and brought back some chocolates with nuts, as gift for the children. A classmate of Neera arrived and the chocolate box was opened for her friend, who took one and shared it with Neera. Meenu noticed that it contained hazelnuts and she got apprehensive. Suresh, Meenu and Sunil were just leaving to go shopping, which they immediately postponed to watch any possible ill effects of the nuts on Neera. They waited for an hour or so and then left her under the care of the maid and Neera's friend. Normally the allergic reaction used to be fast. Thus Suresh felt safe to leave her. The friend stayed on for quite some time and then left. I, with Nirmala, had come to pick up the Exam results of my grand daughter Nandini (we call her Ninni) from the school in the same locality. On our way back, we decided to see Meenu and her family. As I ascended towards the flat (the apartment), the scene was chaotic; the maid was running around shouting that the "baby was in bad shape". She called the lady doctor staying next door who decided to take Neera to the hospital where she and her husband were working. It was a bit far off. I started searching for the family in the two nearby markets. I asked them to immediately rush to the hospital. But no one can change the destiny; by the time we reached the hospital, Neera was no more; in spite of the best efforts of the doctors, they could not save Neera and we had to bring Neera's body home, without her soul.

Dada was immediately informed about this tragedy; he was in Noida at Maharishi Mahesh Yogi's Ashram. Ila and Avinash (Ila's husband) were called earlier at the hospital. The rest of the family got the news and all gathered at Delhi. Dada's first grandchild left him weeping. This calamity was just too much for Dada; he was full of grief. His inner self was aching but looking at his daughter Meenu and Suresh in deep pain, Dada again became composed and was in command to meet the catastrophic situation. Rest is now past for the eternity.

They say God is Great and his designs are unpredictable and unbelievable. Who knew that worse was still waiting for Dada. Dada's second son Raj Ranjan, who had done well at his studies- Bachelor

in Science, and Master in Commerce- had joined an offshore contracting company, had gone to USA for Computer Science exposure, and had returned to India. He had obtained a job in a Computer Operations outfit, in India, and rose to the position of General Manager, married a sweet girl Poonam and was blessed with two lovely children (daughter Tanima and son Sanket). For his work, he had to travel by road and would sometimes take the family as well. One morning early in February, 1993, they were on the road between Lucknow and Allahabad. The experienced driver of the car was on the steering wheel, Ranjan was reading the morning newspaper; and Poonam and the kids were in the back seat, chatting in the natural chirpy style. Out of nowhere, a truck came and collided with the car with a deadly blow to Ranjan; the driver jumped off but Poonam was hurt in a gruesome manner; she was in an unconscious state. Fortunately, both the children were saved with minor scratches. In the ensuing mayhem, Tanima held the Fort. Police arrived to provide first aid and the information was sent immediately to Dada; he rushed to the site to take them to a Lucknow hospital. I had been just out of a hospital after a major surgery of total hip joint replacement and was recovering at the house of Ila and Avinash. I got the news first of the accident and, within hours, that Ranjan has not survived the injuries; he was only 41 years old. No one had the courage to tell Poonam of her loss. Her father and Dada took the courage of breaking the awesome tragic news to Poonam who had regained consciousness in a separate hospital ward. One can imagine the air filled with sadness of the chilling cry all around. The fall-out of such adverse conditions in life has to be faced with steel courage and Dada was a person to stand up to face such a tragedy –once again in his life. I can only say that when feet meet the street and pebbles start hurting, one finds ways to get over the hurdles. Time is a great healer. Dada organized a home for Poonam and children at Allahabad near their own house where his eldest son Deepak (with Madhu and their son Monu and daughter Pinki) was on hand to help. Dada and Bhabhi slowly reconciled to the loss of their naughty and loving son Ranjan. Throwing off the heavy emotional loss from their shoulders, Tanima and Sanket took to their studies with all seriousness. They are lovely

well-balanced kids. God Bless them. Poonam has now moved to Gurgaon area, Haryana.

Dada was no more

Allahabad, our birth place, and Dada's *Karma Bhumi* (work place) flowered again with his earnest efforts in floating an organization in memory of our parents to serve the under-privileged community at large. It immediately caught the imagination of the members of the family, friends and Dada's well-to-do students all around. Funds were soon available and Dada got immersed in working out details along with the trustees. He had dreams to fulfill. He was 75 years young in spirit and action but not so young in body as per Indian conditions and standards. It was 13th of August 1997 when I received a phone call from Avinash that Dada had a stroke; at that time, I was living in Muscat- Oman with our daughter Rita & family. I prayed for his recovery and went to bed. The next morning brought the horrific news of his passing away. Shell shocked, we arranged our awful journey to Allahabad knowing full well that I will not be able to see his face anymore. My life has been shaken many a times but this broke my spirit and body. The train of events of 70 years passes through in a rush like a placid stream of river touching the shores of villages and towns with human faces that inhabited them, some laughing and some crying for help but all in vain, the stream gushed through.

I was told that by the funeral pyre that was lit for Dada there were about 1,500 mourners who had gathered at the bank of the Ganges, including the Elite of the city, from the academic circle, judicial luminaries and politicians. When I arrived a day after the independence day of India, where the flowers bedecked Delhi Airport, I was reminded of August 15, 1947, Dada's entry date into the portals of Allahabad University faculty —when his journey to work had opened up the vista for him to lead an honest life.

I stayed on for several days receiving messages of condolence from his students living outside Allahabad and India, all in deep sorrow, yet, showering lavish praise for his characteristic smile and

his helping attitude. One of his students as well as colleague Dr. Murli Manohar Joshi, who was then a Cabinet Minister in the Government of India, paid his homage by visiting the house — touching the ground in front of Dada’s garlanded portrait. He made it a point to remember him properly by getting a road in our suburb named after him “Professor Krishnaji Street”. This in short is the tale of the four siblings.

Dada was a man of great vision exuding confidence, integrity and dedication. His values of life are worth emulating. Dada — wherever you are, I pray to the almighty God for peace to your pious soul and I seek your blessings for us all.....Amen!

Concluding Remarks

I have attempted to write to the best of my capability some reminiscences of Dada but my script is in a shaky, disjointed language; it stands no comparison with Dada’s writings throughout his life spanning three quarters of a century. He was a Gem of a person in all its genuineness, not as a cliché; colossus by all standards. May I beckon the young generation of the family, as old order changes yielding place to new, to take hold of the family flag and pull it to greater heights.

On lots of occasion, people ask me – How are you? My response is fighting fit and fine with years’ old aching broken bones and moody shaded heady heart, pulsating and chugging like an antique T-Ford model car on the streets of Gurgaon. I live in Gurgaon –Haryana-India, where I own a home. We live very close to our lovely little daughter Ila (spouse: Avinash; and sweet chirpy grand daughter Isha). The name Gurgaon has been changed from Guru-gaon (Village of a teacher- coach). This is the place where Rishi (Saint) *Dronacharya* taught the Art of Archery to the legendry Pandavas (the five brothers: Yudhishtir, Bhim, Nakul, Sahdev and Arjun, the best of the five). Remembering *Dronacharya*, Dada too was an Acharya, a great Teacher to hundreds of his successful pupils, still loving him respectfully.

Gurgaon is today a Mini Silicon Valley of the East, buzzing with

active young men & women, day & night. It is a happy place of simmering brilliant light rays peeping through windows of high rise buildings on both sides of the broad avenues along with flood lit green Golf Course, but nestled in between, visible from the balconies of some of the flats in its vicinity. The view is comparable to various metropolitan cities of the world fighting for material gains on all fronts.

I wish Dada was with us now to lead us from the darkness of materialism to the light and sanity of pure spiritualism with goodness of life.

I think Dada's philosophy of life was guided by religious 'edicts' in Gita, Quran and Bible, concisely placed in simple thoughts like, "When one dies people will ask what property has he left behind him?" But the angels will ask: "What good deeds has he sent before him?"

I leave to the rest to the next generation and I end this personal recollection with Dada's simple words to enshrine his memories; "Let *Bygone be Bygone*"; "*Be Alive Today*" and lastly "*Work and Pray for the Well Being of All.*"

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1. Written at the home of my daughter Rita and my son-in-law Shekhar in Dubai
 2. *Amma and Babuji: Our Life at Allahabad* (Govindjee, Ed.), March, 2007, PDQ Printing, Urbana, Illinois, USA.

My Dada¹

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God's will is all pervading reflected in Nature and in all of us; it is graceful and free and it is the doer of all things; without His will, even a single leaf does not flutter. Nevertheless, I want to believe that my coming on this Earth was propelled by the intense desire of a six year old young boy to have a sister.

It so happened that on the auspicious day of *Bhai Dooj*² the boy's cousin sister came to adorn the occasion. This displeased the boy and he hid in the house. His mother persuaded him, but he didn't yield. After constant questioning, he said, "when I'll have my own sister then I'll accept Bhai Dooj". He wasn't prepared to listen to anything: neither proper, nor improper.

It was a coincidence that when the boy was 7 year old, his mother gave birth to a baby girl. On the auspicious occasion of Bhai Dooj his mother put the baby girl in his lap, raised the girl's hand to put vermilion mark on the forehead of the 7½ year old boy. Although the sister was unaware, brother must have been overwhelmed. When I grew up, I became aware of this incident not forgetting the powerful emotions that engulf me every time I think about it.

This special boy was Krishnaji, eldest son of Sri Vishveshwar Prasad and Srimati Savitri Devi, and I, his sister Malati, who was nicknamed Bitti at home. Krishnaji was my eldest brother, our 'Dada', and my other brothers are : Gopalji (3 year older than I) and Govindjee (3 year younger than I).

The locality where we lived had a large concentration of Bengali families. We learnt to address our eldest brother Dada, a possible influence of the Bengali culture. Many people found it strange that 'ji' (or 'jee') was added at the end of my brothers' names (Krishna,

Gopal and Govind). In reality, these names were given by my father's uncle and were accepted by my father. Anyone of his character, certainly in those days, would accept his elders' wishes with all his heart and without any complaint.

When Dada was a student of MSc, our father (Babuji) expired in the December of 1943; the final Exams of Dada were scheduled for the next March. Our uncle (Sri Har Prasad) accepted us in his home, and we lived there for a few months. In April or May of 1944, Dada was awarded a research fellowship. The results were declared after awhile. Dada became overprotective towards us. Before the money from research scholarship started to come in, he picked up tuition work so that there was a cash flow in our house. At a convenient time, we moved from our uncle's home to a rented house. Since then, Dada remained steadfastly engaged in our lives, our education, our mother's care, our weddings, getting the two brothers abroad for higher studies; he was even involved in solving our children's problems.

We four (3 brothers and a sister) grew up together. Allahabad was such a place that we did not have to go out for education. I remember vividly that Dada was the one, who gave up his rights and endorsed our freedom. He was the armour for Govindjee, who was the youngest and I for one was constantly teasing him. I kept finding faults with him and Dada constantly protected him. At times it so happened that Govindjee could have been made a laughing stock, specially when the one 'enemy' (me) was bent upon humiliating him but Dada's front was very strong and he kept no stone unturned in keeping Govindjee's image crystal clear (clean). Dada's actions were dictated by pure love and affection, and the child Govindjee slept near Dada.

I don't remember much about interactions between Bhaiya and Dada (see, however, the write-up by Gopalji, Part B, #20). I remember a few stories. When Bhaiya (Gopalji) was preparing for MSc examination, he fell ill. He would lie in bed, while Dada sat in a chair next to him and helped him with his Exam preparation. Bhaiya completed his MSc examination with that help. A few years after he became independent, his salary surpassed Dada's salary. Moreover whenever need arose Dada's sacred wheel (*Sudarshan Chakra*³) cast its spell to calm all.

Bhaiya is soft natured and has sophisticated taste. Whenever he got emotional, sensitive, or went through a shock of illness, he called upon Dada for rescue. Dada would travel from Allahabad to Delhi to help him resolve his problems. Bhaiya would then pull himself together. This situation remained even after Bhaiya's retirement and is proof that no one has been luckier than him who has received such enduring support from Dada.

Amma (our mother) remained bedridden all her life⁴, whereas Babuji (our father) was mostly on tour on his job (he was representative of the Oxford University Press, Northern India). When Dada had appeared for his BSc examination, Amma came down with Bronchitis/Pneumonia. He remained in a chair next to Amma's bed, read to her *Ramayana* and cared for her. Engaged in these activities, he would spend the entire night awake. Although younger, we were not that young that we couldn't share his responsibilities. I have to admit that we lacked the ability and an innate sense of responsibility that drove Dada's personality. The feelings that arose seeing him cannot be described in words. An unspoken emotion engulfs me always.

When Babuji left us, then Dada was present. The affection and protection that I received since childhood from Dada was fatherly. This quality of his, in Babuji's absence, was a gift of God, and not an artificial plastered responsibility. Enforced responsibility would not have a sweet feeling; it would be dry and filled with complaint. Today at the age of 81, I very well understand the difference between the two.

Dada was appointed as a Lecturer in the Physics Department at Allahabad University. His personal responsibilities included two brothers and a sister, all of whom were still in school or college, a wife, children, who arrived after a few years of marriage and an ailing mother, who required medication, regular doctor's visit and care. If mother was the epitome of love and affection, then Dada was '*Shravan Kumar*'⁵.

Our lives carried on without any question mark. Every body's needs were taken care of and the one who was executing all of this exhibited no signs of stress. Dada had a sunny disposition equally matched with a jolly personality. He lived with the mentality of 'Let It Be' (*Avamastu*). How he assembled everything cannot be fathomed but I never felt a lack of anything.

To be sheltered under such a personality is to be showered with blessings. I was always shielded from the negativity that is normally a part of growing up in people's lives, hearing repeatedly 'No'; thus 'No' becomes a part of one's personality.

Even if I try to reminisce the affectionate incidents of my life, the importance that Dada placed upon me, and his struggles that I have witnessed together with him, I will not be able to convey my thoughts in its entirety ever.

Dada had sharp eyes, an exceptional capability of sensing others' needs and wants. Once a Fair (*Numaish*) had come to our town, and we all went to see it. We went into many shops, looked at some exhibits, and bought some things from some vendors. One of the shops was a *Sari* shop, where without realizing that Dada had caught me prowling on a sari I liked, we headed home. He made a note that I liked that sari. That was enough. Quietly, without saying anything to anyone, he walked the next day, 3-4 miles, back to the shop to buy the sari. Consequently, he was left with no money. It overwhelmed me.

I am reminded of a second incident. My violin teacher suggested that a violin was up for sale for 35 rupees and I ought to buy it. I came home and mentioned it to *Bhabhi*. She did not have that kind of money. Dada came to know about it. I don't know what he told *Bhabhi* but I received the money for the violin.

I was a friend freak. Friends visited me all the time in groups as well as alone. *Bhabhi* had to play host but that was a homebound issue. There was always a hustle and bustle in the house. Dada was everyone's Dada, *Bhaiya* was *Bhaiya* to all, *Bhabhi* was everyone's *Bhabhi* and *Amma* was *Amma*. The problem arose when I had to go to friend's houses for partying. Dada had given us immense freedom but I was not allowed to go alone anywhere. Although I had learned to ride a bicycle, *Amma* did not allow me to use it to go anywhere on it. Dada would instruct *Govindjee*, "Escort *Bitti* wherever she has to go and bring her back." If *Govindjee* was reluctant, Dada would not force him, as he did not like to impose on anyone. But he made sure that I went. He would look for an alternative, for example, our elderly gardner (*Mali*). His name alone would make me feel uncomfortable

because this gardener would sit on the rickshaw floor, next to my feet and give my friends a reason for ridicule. But the atmosphere remained so vibrant that I would keep quiet. If the gardener was unavailable then Dada himself, then a Lecturer at the University, rode on his bicycle alongside my rickshaw escorting me. This would sadden me and I would promise myself never to go out again, a promise that always got broken.

To encourage others was an integral part of Dada's personality. Once I came home after my examination and sat crying. Dada learnt about it. He came to me and asked, "What happened?" I replied that 20% of the Exam was tough. A powerful voice over my shoulders said, "Well Done!, very good, you have attempted 80% of the questions, what more do you want? Do you want to "rob" the examiner". Then, he turned to Bhabhi, "Oil her hair and feed her something", then went away to accompany his friends in the lounge. My hair got oiled and I felt the miracle of touch healing. Relieved I started to plan my next day.

This was a time when I was studying in my first year of 'Inter' Exam (IA, Intermediate in Arts). There was a send off ceremony for the second year students. I was part of the organizing committee in the College. The caterers suddenly ditched us at the last minute. We were tearful. But I knew I had someone to depend upon with unending support. Our 'cry for help' reached Dada; and, soon the relief came to us in the form of a caterer whom he brought along himself. Even today when I meet my friends, they remember Dada.

Not to let go in difficult times was Dada's nature. It could be anyone in difficulty: an acquaintance or a relative, he would always find a solution. All felt they had a right to seek help in difficult times. So many families stayed at our house on so many occasions. Many girls were married from our house. Life carried on without any debt and selfishness, supported by a firm pillar of strength –Dada. Only God looked after his wallet.

Dada's love, his care, his heed and worries can only be described in deeds not words. Once I fell ill. I was given homeopathic medicine by our family doctor. I was not getting better. One day, upon his return from the University, Dada enquired, "How is Bitti?". He learnt

that there had been no improvement. He immediately went to the doctors' clinic and threw him an ultimatum, "Listen, if Bitti does not improve by tomorrow morning, then I'll get your clinic destroyed". These were empty words; in reality it was an expression soaked in pure anger emerging out of sheer concern for me. These words carried no literal meaning. Ah! With God's grace the clinic remained intact.

I was thin and slim. The doctor suggested that I should be given calcium injection. The 'compounder' came. While searching for a vein to give me an intravenous (IV) injection, he punctured it severely. That was the worst day of his life. He was shouted upon and scolded so harshly that he ran away and probably never heard the warning given to him, "Do not ever come back".

I was married in June, 1953. I went to Chhapra, and then to Bhagalpur, both in the neighboring Bihar. All matters that cause uproar, situations that make living for young boys and girls unbearable and the issues that parents go through having a young person at home were solved intelligently. My future husband (Radha Krishna Sahay (RKS), a classmate of mine) and I wanted to marry. In the home itself, Bhabhi acted as an intermediary between me and Dada. Dada ran an enquiry line, then gathered all the necessary information needed and got me 'hitched' to a class fellow of mine (RKS). I don't know if the bride and groom's horoscope ever matched, but the horoscopes of the two brothers-in-law (Dada and my husband Radha Krishna) matched so perfectly that this sister of a loving brother—who would lay down his life for her—never ever had any regrets. Dada was utterly a person for justice-loving, truthful, and self-respecting for whom money was a means not an end. After Babuji's death, my school fees were waved; this situation lasted for 6 months. When Dada received a research scholarship from the University, my school was informed that Malati's fees needn't be waved any more. I then walked with my head held up high amongst my principal and my teachers.

I can cite innumerable examples of human touch when it comes to describing Dada. It was this particular quality of his that commanded love and respect from all corners. Everyone addressed him as Dada with love whether it was a peon, people from our neighborhood, his juniors, servants or anyone else. Once a girl came

to our house on a bike and she looked worried. Dada asked her, "What do you want?" She replied, "I need a letter of recommendation". Dada asked her all relevant information e.g., name, office, and the post (job) she was applying for. Her answer to all of these was that she did not know. Dada kept quiet for a while. Then he gave her a letter based upon her education. I questioned his judgment; when she left, I said to him, "Why do you help such an idiot?" He turned towards me and said, "Only those who have less of a brain need help". His answer calmed my agitation slightly.

Dada respected human beings. Whoever, it may have been. Amma also had this quality; perhaps this had trickled from her heart onto his heart and made it shine. He did not have a negative answer for priests, the poor and the beggars. Once he was returning with a wedding party after his second son's marriage. On the railway station a priest spread out his palm before everyone to beg. Dada's friends ignored him. But he took out his wallet and gave him something. His friends joked, "He has conned you". Just then this priest or *Sadhu* picked some earth and said to Dada, "Take this and make a fist". He went on, "Now open your fist". When Dada opened his fist, the earth had turned into a fistful of rice. Before leaving Dada the priest predicted, "Keep this in your wallet, in the month of *Ashwin* you will receive such a large sum of money that it won't fit in your purse." In August (or was it September?) that year, C.V. (Chandrasekhara Venkat) Raman award was bestowed upon Dada. Surely that would not fit into his wallet.

In our house, Amma would organize *Puja* ceremonies. She would consult the pundits or priests regarding children's horoscope and have puja performed for peace (*Graha Shanti*). Although Dada was a student of science he had faith in astrology. He would have horoscopes matched in weddings. There were times when it wouldn't match. Once I fell ill. We lived in Shantineketan then. Dada heard of my illness and he had my horoscope read by a Pundit and thereafter performed Puja for my speedy recovery and peace. This was followed by a special bead that was sent to me with instructions for wearing that.

Whatever I am today, it is because of Dada. After Babuji died (at a time when Dada was studying and there was no source of income),

he decided that his brothers' studies could be discontinued (temporarily, I assumed), but Bitti's study must be continued. It was because of his bold decision that I was able to obtain a MA degree, and later served as a Lecturer at the Bhagalpur Women's College (Sundarvati Mahila Vidyalaya) for 31 years; I have been receiving pension for the last 19 years. He was concerned about my every situation, every problem until his death. When we travelled abroad, he saw towards the arrangements and came to see us off at the Delhi airport after travelling by train from Allahabad. He was involved in my children's life the same way. Here was a man who was approachable to everyone at all times—no apprehension of fear when a mistake was made and no feeling of shame when one acted silly.

On the one hand, Dada was very pleasant, jovial and had an impressive personality, but he also exhibited immense courage in the face of difficult situations, unbending patience and tolerance that could break God's curse. Only such a person can serve as a pillar for his society and people around him.

There were innumerable instances when he proved his *metal* time and again. I remember the time when his forty-year old son Ranjan died in a car mishap. Dada alone kept everything going—Bhabhi, Poonam (Ranjan's wife), who was in hospital, the two children plus the arrangements for all who had gathered at this sad occasion.

After a few days of this most difficult and saddest incident in his life, his former students honored him at Delhi University. People who had invited him were doubtful that he would come to the ceremony. But I was stunned to hear that he decided to attend. He felt that he could not disappoint the organizers, who had put in their valuable time and effort. At the appointed time, he left for Delhi from Lucknow. He picked up his briefcase and walked down the stairs—this image of his haunts me until today. I am convinced that the people present at this function must have felt that a special person was amongst their midst.

Dada possessed the perfect combination of intelligence and warmth of heart. I have talked only of his heart. I feel because love is so fluid, it settles easily on appropriate level. The love that I received

from Dada trickled through Bhabhi's heart and spread to all the children.

Bhabhi sent me a *Sari* every year after my wedding. Whenever I said that was enough, she would reply, "Whatever you give the girls is never enough". She kept her promise till the end. She is no more with us now. A few days before the festival of *Teej*⁶, Bhabhi's daughter-in-law Madhu telephoned me, "Bua (aunty), Teej is here I won't be able to fulfill what Mummy did for you; nevertheless I am sending you something from here for Puja." I had not imagined that Bhabhi would have passed on what was in her mind to Madhu. Such overpowering emotions engulfed me that I felt that I was cut off from all sides. Gradually a special realization came over me and I found myself flying high as if I was in the 7th heaven! I felt that both the earth and the sky belonged to me.

Undoubtedly, the subtle is more important and pervading than the physical. Both Laxmi⁷ and Kuber⁸ stand no chance before *Love*.

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1. Translated freely from Hindi to English by Anju Okhandiar, my daughter who now lives in Scotland with her husband Ashok, and her 3 daughters. For original Hindi version see Part D of this book.
 2. Bhai Dooj: *Bhai* (or Bhaiya) means brother, and *Dooj* is two days after the new moon; it is celebrated two days after *Diwali* (the festival of light). On Bhai Dooj, sisters perform Aarti for their brothers in a symbolic affirmation of their bond. On this day, sisters pray for their brothers and express the love that exists between brothers and sisters.
 3. *Sudarshan Chakra*: It is a spinning disc like weapon with very sharp edge; it serves as an attribute of the Hindu God Vishnu, the maintainer; the other two in the Trinity are Bramha (the creator), and Shiva (the destroyer of the evil).
 4. *Amma and Babuji*: Our Life at Allahabad (Govindjee, Ed), Printed by PDQ Printing, Urbana, Illinois, 2007.

5. *Shravan Kumar*: He is from the time of King Dashratha. Shravan Kumar's parents were poor and blind, but he took care of them to the end with sincere love and respect.
6. *Teej*: During the Teej festival, many Hindu women fast and celebrate for marital bliss, well-being of spouse and children and purification of their own body and soul; it lasts for 3 days and combines, interestingly, sumptuous feasts as well as rigid fasting.
7. *Laxmi*: In the Hindu mythology, Laxmi is the Goddess of Wealth and Fortune, and represents the beautiful and bountiful aspect of Nature.
8. *Kuber*: In the Hindu mythology, he is the God of Wealth and Gods' Treasurer.

Dada¹

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He was addressed as Dada by all at home, by friends and acquaintances at the University and elsewhere. This appeared odd to me at the beginning, but later it became clear that this salutation expressed more of an affection rather than a mere form of address. He had spent his childhood in the Bengali neighborhood (in Allahabad) and that was a contributing factor as to why he was addressed as Dada by his younger brothers and sister. This is where they learnt to call him Dada (a term for elder brother in Bengali), not Bhaiya (a term for elder brother in Hindi).

Later, when Dada had his own children, they too following their Bua (Aunt) and Chachas (uncles) addressed him as Dada, not Babuji or Papa. This journey of being addressed as Dada did not end here because he was undeniably so dependable that people got emotionally attached to him. Everyone at home and outside (his home) would come to him with their problems and he would come up with solutions with speed and understanding. I remember I had asked him once, “Dada, how do you find solutions to problems so swiftly”? He promptly answered, “Every problem has a hidden solution, one only needs to look within.” He was cognizant and informed of the world around him

On June 24, 1953, I was married to Malati (Dada’s younger sister) and became very close to Dada since that very day. There was an attraction in his personality that was fluid and sweet. I have a vivid recollection of my life since marriage, conjuring two distinct and everlasting images before my eyes. The very *First* ‘frame’ has Dada standing in front of Amma (his mother). Amma was very slender and

also bedridden. She was as light as a feather and whenever Dada was home he gave her company. Amma was deeply religious; she worshiped Hanumanji (a saint/God from the epic Ramayan). I felt that Dada was like Hanuman in her presence. Many a times I also felt that he stood like the massive tree of *Bargad* [(Banyan tree, *Ficus benghalensis*) with its branches and shoots bowed down to the earth] before Amma.

The relationship between Dada and Amma was spiritual, ethereal; such a relationship is exceptional.

When Dada went past the front gate of his house at 14 B-Bank (Ram Narain Lal) Road, in Allahabad, he stood erect. I never saw him bow before anyone or any situation. I have witnessed him in the company of the Vice Chancellor (of the Allahabad University) as well as with saints like Maharishi Mahesh (Yogi). His self-respect and dignity remained intact every minute before everyone and anyone.

I reminisce—1966. News of Amma’s death reached us and we traveled to Allahabad. On the train, I pondered how perturbed Dada would be when we meet him after this sad event in the family. He had turned down great job offers from India and abroad for Amma, and he was destined never to leave Allahabad permanently. When we arrived in Allahabad, I found him as solid as a rock. Chants of 12 pundits were echoing all around the house, while Dada was in conversation with the chief Pundit.

“Whatever one does on Earth is relevant only in this lifetime, anything one does after death is a mere custom, Punditji,” he spoke with a sober- minded clarity.

What will be the mode of the last rites”? asked the Pundit.

You know that better than me, Punditji”, replied Dada, although Babuji’s last rites were performed in *Arya Samaji*² customs.

But Mataji (i.e. Amma) was *Sanaatani*³. Thus, her last rites should be performed in “Sanaatani customs”, insisted Punditji.

Dada accepted Punditji’s words. He performed Amma’s last rites, undeterred, following all the rituals for 13 days. He was not seen swaying away from the rituals even for a minute.

I am reminded of another sad and shocking event. When Dada's youngest son Ranjan met with his untimely death in an accident, we rushed to Lucknow. I saw Dada as unconquerable and imperturbable. Nevertheless, after performing three days of last rites for Ranjan, he traveled to Delhi, where his students had organized a special seminar to honor him. He took everyone by surprise by attending that function. He participated with all sincerity in the seminar. He seemed bound by the idea that the expense and effort of the organizers should not go in vain.

The image in my *Second* 'frame' is contrary to the First in quality and significance. We were returning to my home (in Bihar) after my wedding (with Malati) from Allahabad in 1953. The train was about to leave from the Rambagh station. We (Malati and I) were in different compartments. Dada was overseeing the arrangements of refreshments for our journey. He approached my father just before the train was to leave. Then he moved towards my compartment and stood in front of the window. As the train started to move, I saw huge tears roll down Dada's cheeks. For the very first time, I was confronted with a sobriety and expression of sentiments that I had not witnessed before.

- His tears shone like jewels upon his rock- like personality.
- Those tears are still before me.
- Those tears have been an indispensable part of my graceful journey for fifty seven years of my married life.
- Those tears have evoked self- knowledge in me.

Every year when the summer vacation would arrive, we would head towards Allahabad to meet Amma. As long as she was alive we met Amma every year.

It so happened once that Amma did not want us to return to Bihar after only a brief stay at Allahabad. Our return tickets had been purchased and the day and time of our departure was confirmed. The train was to leave the Prayag station at 9 in the morning. We were ready to leave when my shoes 'went missing', nowhere to be found.

"Now you will have to get new shoes before you can leave. Let's go and buy a new pair for you", Dada said and kept smiling. He had

planned it in such a way that we had no option but to stay back. My shoes were found right after the train time had lapsed. Such was Dada- kindhearted and characterized by tenderness.

Those were the days when Dada was engaged in research (in Physics) himself and was supervising research as well. He was unusually persevering, working diligently in the laboratory and with students. He was in the forefront of the study of microwave spectroscopy, not only at Allahabad University, but in whole India. Juggilal Kamplal (J.K.) Institute of Applied Physics, which was part of Allahabad University, housed a newly built microwave laboratory. Often Dada would take me along and I cherished his company. The laboratory was air- conditioned and I was sheltered from the intense heat of Allahabad.

Dada would snatch time off from his busy schedule and take me to the Plaza Cinema in the Civil Lines on some Sundays. I saw many science fiction movies in his company. There, I saw H.G. Wells's, "The Brave New World" and other fantasy films. I witnessed this side of his personality: that of a scientist, a researcher. He would often say,

"Education is incomplete without the study of science".

I remember a vivid account when he had accepted an invitation (of course with the imperative desire of meeting us in Bhagalpur) from Tej Narayan Jubilee College to act as an examiner for practical exams there. The departmental staff was keen for him to lecture as well. He gave two lectures. The first one was for the professors and students of the Physics Department, and the second one was for the general audience (held in the Main Hall). He delivered the first lecture in English and the second in Hindi. His command of both the languages was superb. During his lecture he had mentioned, *"If ever there is a God anywhere, then science will search him out. Science will even build a ladder so high that it'll take everyone to him"*. Such a deep-rooted belief in Science was rare— at least I have not witnessed it anywhere in my life as yet.

Dada spoke uninterrupted; he was flawless. Generally at home it was often the case that family members would get tired of waiting

for Dada to come to the dining table, while he would be engaged in discussion in the sitting (drawing) room. Only when Govindjee created a stir people would leave, although Dada would disapprove of Govindjee causing a fuss.

Similarly, his conversations on the phone would be incessant and unending. Truly speaking, he was so benevolent that he would listen to everyone with due consideration and search for solutions to their problems.

At heart, Dada was a scientist first; nonetheless, he was also a dreamer. I remember sitting on the bed in the courtyard while he imagined of a house that would have a complete room at the top made out of glass. Even the ceiling would be built out of glass, transparent. One would be able to enjoy all the seasons from this room come rain or shine. To add to this fun a ‘remote’ would operate to open and shut the roof. Remember that the concept of remote was not even thought of at that point in time, at least not in India, not that I am aware of.

Although floating in imagination he would remain compassionate to his loved ones and never forgot them. Expressing his desire to accommodate everyone he would turn to me and say, “There will be a circular courtyard in the lower part of this enchanting house. There will be rooms built all around it— yours, Goplaji’s, Govindjee’s and my own.”

Dada was equally adept in philosophy, just as he was in science; in addition, he was accomplished in rendering social and family customs. After my wedding, he took us (i.e., Malati and me) to meet each and every relative not only in Allahabad but also in Lucknow, where his cousins lived.

He had a particular consideration for the weaker members of the extended family. Some members of his in-laws’ side were economically not well off. A visit to Allahabad, initiated by Dada, has left a deep memory. Some people were constant visitors at Dada’s place. They would dine at the house and when they left, Dada would pay for their return journey. His character radiated warmth in a (one) and every relationship; he never missed an occasion—wedding, for

example— it may be my daughter's or son's or even a problem connected with them. He would truly bewilder me sometimes.

Sheer goodwill underlying family or social relationships was the main *Mantra* of Dada's practical life. Here is an anecdote: At the closing ceremony of my daughter Anju's marriage, which is the *Vidai* (when the girl leaves her parents' house to go to her in-laws house), I quietly slipped away and hid in the extended garden. I don't know how—but Dada sensed it and spotted my absence. He came looking for me, counseled me and escorted me to face Anju. He gave me strength.

After his retirement from Allahabad University, Dada left Allahabad to live in the Ashram of Maharishi Mahesh in Noida, Uttar Pradesh. He was instrumental in furthering a research project on Vedic Mathematics. I got an opportunity of visiting the Ashram myself and witnessed Maharishi's open *Sabha* or meeting. I saw Maharishi offering a chair to Dada with great respect and suggested that he remain relaxed, and must do everything at a slow pace. Maharishi would then turn to Bhabhi (my sister-in-law) and say, " Mataji, please take anything from the kitchen, anything that you want. Eat and drink well—butter, milk anything. Live anyway you like". The truth is that in those days, Bhabhi's kitchen was overflowing with goodness and goodies that at least I had not seen earlier.

Nevertheless, situations constantly presented themselves adversely in Dada's life. In those days he saw it fit to deposit the five thousand rupees, he received from the Ashram, in a Bank in order to support one of his sons. He received regular work from various institutions because of his academic expertise like that of a marksman. He was a connoisseur of skilled knowledge.

It is to his credit that his life and his relationships were never compromised. I never saw a wrinkle on his face.

Dada had introduced us to the Maharishi Mahesh Yogi—deep in the night (or say very early morning) at around 2:30 a.m. No one knew when Maharishi retired at night. We arrived at 2:15 a.m. to see him. He was engaged in conversations with a Japanese delegation at that moment. We walked into the Hall quickly and saw Maharishi

sitting surrounded amongst flowers. During our meeting he spoke only to me on one *subject*—The Origin of Language. We sat listening attentively for nearly two and a half hours. No sleep. Dada, Malati and I were awake as barn owls.

The truth is that I got the opportunity to meet the Maharishi solely due to Dada.

After a few days, Dada's youngest son Ranjan died in a car crash. A mere forty years of age! He was a Manager in a Computer Company in Lucknow, UP.

The intensity of this sad event prompted, rather forced, Dada to relinquish Maharishi's ashram. He went back to Allahabad: his daughter-in-law and grand children were there. By now, a new house was purchased for them so that they could remain independent. He also negotiated and organized a steady flow of income from Ranjan's company for the family.

By now both my wife and I had retired. I stayed in Allahabad with Dada for a month. Again, I never saw a wrinkle on his face.

Dada always came up with a thoughtful and positive solution for whatever situation he came up against. For sometime he had nurtured a noble thought of establishing a trust in the name of his mother and father that would be named, "Vishveshwar Prasad and Savitri Devi Charitable Educational Trust". Dada also desired to start a primary school where children would be free from the constraints of a prescribed curriculum, where learning would be driven by personal aptitude and natural ability. This last dream was like a bridge between family, society and nature. He desired this deeply. He requested that I take responsibility of the trust and settle in Allahabad. Alas, this was not possible for me. My father was old and unwell and he wanted to move to Kashi (a religious place in North India; also known as Varanasi); in addition, I had other pressing problems of my extended family. I could not honor Dada's word.

I remember that whenever Bhabhi withdrew in sadness worrying about Dada's health, he would reassure her, "Why worry, Punditji has predicted from my horoscope that you will leave (this World)

before me”. This prediction turned out to be wrong, and Dada left Bhabhi forever on August 14, 1997.

I look back and wonder whether Dada had a premonition of his death. He had never requested me about anything as vehemently as he did at that point in our lives when he requested me to take charge of the Trust. Could this be the reason why he wanted me to stay in Allahabad?

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1. Translated, with minor modifications, from Hindi to English, by Anju Okhandiar, my daughter. For the original Hindi version see Part D of this book.
 2. *Arya Samaj* is a Hindu reform movement founded by Swami Dayananda in 1875; the followers believe in the infallible authority of the *Vedas*; the doctrine of *karma* is followed; there is no Deity worship, but ‘Havan’ before ‘fire’ is performed.
 3. *Sanatan Dharma* is the traditional Hinduism; the followers are expected to perform their own duties as individuals; they would be followers of various scriptures, although they may be different for each one. In practice, most worship deities.

My Dada, and Some Other Recollections

Govindjee

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It is a difficult and daunting task for me to write about Dada—he was my Mentor, my Guiding Spirit, and the one who made me what I am today. (See Preface of this book.) My memories and recollections, however, are not coherent, and they appear in my mind as isolated incidents. Although the most recent events are fresher in my mind than the past ones, I shall follow a sort of chronological path wherever and whenever possible.

In this Tribute to Dada, I first present here some of the recollections of my own *Early Life*. I was about 10 year and 9 month younger than Dada: I was born on October 24, 1932 to Amma and Babuji¹ in Allahabad. I have no memory of my childhood up to the age of 8 or so, especially about my parents, 2 older brothers (Krishnaji, our Dada; Gopalji, my elder brother, Bhaiya) and Malati (my elder sister, Didi). However, I do remember a tutor who was hired to teach me the three R's (reading, (w)riting and (a)rtithmatics), I assume. I rebelled and did not want to be subjected to his lessons. I felt I knew more than what he would teach me. I made unusual excuses by constantly repeating to him that "I am busy", no matter what he said. I also have a vague recollection of living in a house in Madhvapur that faced the main street. There was a well on the side of the house and we had two dogs: *Poppy* (a male dog, with shaggy hair) and *Pumpy* (a female dog with smooth hair). I remember playing with them. I also vividly remember when *Pumpy* returned from a visit to the field on the other side of the street with a bone stuck in her mouth; she was also bleeding.

I had skipped going to school from the Kindergarden to the 3rd class. I entered directly the 4th class of Colonelganj High School in July of 1941 when I was 8 year and 9 month old, although my date of

birth was recorded, by mistake, as October 24, 1933 for reasons unknown to me. The memory of the first day of my school is quite vivid. I attended a class that lasted for about an hour. The class was dismissed and I assumed that the school was over since I had never been to a school before. I left the school grounds, but when I looked back on the street, there was no one coming behind me. I was the only child on the street! I immediately recognized my mistake and went back to school—there was total silence—no one was visible. Then, I guessed correctly that all the students must be inside classrooms. I meekly entered a class room where I could recognize some students from my first class. I don't recall being scolded or punished for my mistake.

I do have recollections of my family, starting with July, 1941, and even earlier. I recall living in 34/3 George Town, located in a house in a large residential complex; all of it was owned by one Mr. Chaddha. The complex had a boundary wall (*Hatha*), and many mango trees and lot of place to play. One of our neighbors was Mr. Ram Narain Varma, an advocate. His eldest son was Mahesh Chandra; Mahesh had many brothers and sisters. Mr. Chaddha's family also had many children (I remember "Anno"; Raju and Teju). Thus, we had a team; we had great fun: we played "*Gulli Danda*"; "*Khoh Khoh*"; "*Kabbadi*"; Badminton; and Cricket. Beyond it, we played school. One of us will act as a "Principal" or a "Headmaster", or act as a Teacher; and the others were to act as "students". We had hell of a great time until one day, we decided to make fun of "Anno". We started singing "Anno Rani Chaddha. Unkay Peyt May Gaddha". (It better remain untranslated.) We did not realize that we were making fun of the family name through this game of ours. Mr. Chaddha, of course, complained to our parents. Mr. Ram Narain called Mahesh and his siblings inside their house; they were punished with a cane, and were not allowed to play for many days. My father simply "grounded me". Later, appropriate apologies were made, and accepted by Mr. Chaddha, and after almost 14 days, we were free again to play, but now we were restrained in our manners.

In fact, Gopalji (Bhaiya) has written a few things about my earlier days; thus, I will try not to repeat them. I do remember Dada's friend throwing chess pieces on the street when he would lose the game

with Dada. I remember Dada's solemn face when we lived in one large single room on the terrace of our uncle's home after our father had died in 1943. Our uncle (Mr. Har Prasad, our Chhoté Chacha, Babuji's only younger brother) lived at 22 A Park Road (later changed to 17A, and now to be precise, its number is 26/17 Panna Lal Road, Allahabad); he very graciously invited us to stay in his home after Babuji's death. I have a vague recollection of hearing bits and pieces of Dada's discussion with Chacha about sending (or not sending) Didi (my sister Malati) for higher education, while they were all sitting in the front yard of the house; I was, at that time, riding a rusty tricycle (that was too small for me) on the terrace (*chhat*). I really had no understanding about all those things. It seems that the discussion included the fact that Dada will be able to earn money to remove our financial difficulties: I had overheard that Dada was going to join a class that would teach him how he would be able to make and pack "jam" in bottles/cans. (My world was that tricycle: I had suspected that the tricycle belonged to the late Keshav Bhai (Krishna Murari, the only son of Chacha) and that I was not supposed to use it.)

The care of Dada for me has always been in my memory. I remember Dada standing by my side when we lived at 3 Cawnpore (Kanpur, now Shri Purushottam Das (P.D.) Tandon) Road, also at Allahabad, taking my temperature when I was laid down with high fever; I was lying on a cot in the verandah that had curtains made of Jute. Much later in life, I remember his great concern and care when I had cut myself badly by a razor blade; I did not want to show him, but he insisted and said "let us look at it together privately, when others are not watching". I vaguely remember that he saw it, cleaned it and put a bandage on it.

On the lighter side, I also remember Dada standing in "Kurta and Dhoti" when a car came by; it whisked by us; and I later learned that senior relatives of the future Bhabhi (Dada's wife) were in that car (see the text by Gopalji, Part B, Chapter 20 for details of Dada's marriage).

I don't have much memory of Dada when we lived in Madhokunj, but my memory gets clearer when we had moved to 14 B Bank Road (Ram Narain Lal Road); this big bungalow was owned by the

University, and Dada was fortunate to have been allotted this for our use. Among our neighbors were the famous Urdu poet Raghupati Sahay ‘*Firaq*’ Gorakhpuri and the historian Ishwari Prasad. Firaq Sahib was famous for his collection of poems “*Gul-e-Naghma*”. A block away lived Bachchan ji, Harivansh Rai, a famous Hindi poet, who wrote and recited *Madhushala*; he was the father of the movie idol Amitabh Bachchan. Bachchan ji often introduced himself by singing a poem, when translated into English, it meant “*A body of clay, a mind full of play, a moment’s life - that is me*”. My world was, however, books, mostly science books. For my books, Dada had first assigned me a closet in the living (drawing) room and later in another room that had been partitioned with a temporary screen. In this room, Dada had given me his own desk, and a chair; the other half of the room was Dada & Bhabhi’s bed room. My bed was in another room that was at the end of the inner verandah. Both the drawing room and my half- room opened into a nice outer verandah. The floors in the house were really nice; they had nice big reddish tiles; there was a grey border around the red middle. I felt good living in this big house. Dada was the Head of the household, and looked after all our needs. He had given me some minor duties (I did have a bicycle, but often I would go on foot): bringing home medicines for my mother (Amma) from Mishraji’s Pharmacy in Colonelganj market, or fresh vegetables and fruits from the Katra Bazaar. It was a good life.

How did Dada help me become what I am today? First of all, he taught me to be independent; he gave me freedom to explore many things. He always encouraged me to do innovative things. While I studied hard, I was also involved in a literary club that we had called “*Aalok*” (that means ‘Light of Divinity’); we brought out a magazine that we called “*Aryama*” (that means ‘Planet where departed ancestors reside’). This required us to go from shop to shop and solicit advertisement so that we can print this magazine, almost without any cost to us, and then distribute it to students free. Most of the articles were written by us, but sometimes, we would publish an invited article. Unfortunately, none of us have any copies to share any more. My articles included: interviews with a leading scientist (Neel Ratan Dhar, a chemist), and an administrator (Amiya Charan (A.C.) Banerjee, Vice Chancellor; he was also a mathematician). I

also wrote an article on “Bioluminescent Organisms”. Daya Prakash Sinha wrote drama, and stories; others wrote poems. Amarnath Bhargava hosted the Aalok club in his luxurious home. Bhabhi (Dada’s wife) always encouraged me to have my own social circle; all my friends were entertained by Bhabhi with tea and snacks (pakoras) when they visited our house, no matter at what time of the day.

I had another freedom that Dada and Bhabhi gave me. I had essentially a private out-house toilet to myself. I would line the entire wall of this room with notes and with equations, and even diagrams (often written on paper that could be removed later, but some difficult-to-remember stuff was written with special pencils directly on the white-washed walls). I used this wall to review my material before taking an Exam. I believe that this helped me excel in all Exams as I could take a quick glance at all the important points. Especially equations that I needed to remember.

The last and most important for me was Dada’s ability to forgive me even for things I would not forgive myself. He, however, would have me apologize if it involved another party, even if I argued that I was not wrong. Here is one story. Once Manmohan Laloraya, a class fellow of mine in MSc (Botany), and I decided to complain to Mr. Girja Dayal Srivastava, faculty in-charge of the library of the Botany Department, about the unfairness of the departmental library system. We were about 20 graduate students: 4 women and 16 men, each group (men or women) could borrow, at one time, 4 books each. Since the number of men was 4 times more than that of the women, we felt it was unfair to men students, although in reality there was not much of a problem for two reasons: (a) several men students did not care to read anything; and (b) those of us who wanted to read, especially two of us, had good friendship with the women students and we would just borrow from them. Laloraya and I went to Mr. Srivastava’s home one evening and complained about the unfair rule that discriminated men students; he did not like this at all. He took it as a challenge to his authority as a teacher. He argued with us: “Don’t you open the door for a woman?” We replied “Yes, we do open the door but this was a social issue, and irrelevant to the point we were making.” Anyhow, when I reached home, Dada was standing at the

door, and asked me to go back immediately to Mr. Srivastava's home and apologize before he will allow me come into the house. (Obviously, Mr. Srivastava must have telephoned Dada before I reached home.) I argued with Dada that "I was not wrong", but he stood firm, and I had to go back and apologize to Mr. Srivastava. Mr. Srivastava, of course, accepted my apologies, and said "I am sure that the whole thing was not your idea, but it must have been that of Laloraya who is a troublemaker!" I knew fully well that this was not the case, but not to make matters worse, I stood in silence. My brother showed his pleasure and told me "Now, you have learnt not to *insult* your seniors." Dada always forgave me for all my transgressions, big or small. He supported me in all my endeavors, and I am what I am today because of him.

I was in Japan when Dada passed away on August 14, 1997. I usually telephoned Dada, at regular intervals, no matter where I was. Thus, when I was at Okazaki, I had found out about his *stroke*. As I was leaving Japan, I telephoned his home at Allahabad again, from Nagoya Airport, to find out about his condition. I asked Deepak, Dada's oldest son, "How is Dada doing". The answer came back, "What to tell?"; then in a shivering voice, he said "He is no more." I was stunned and shocked as if Earth had moved underneath my feet. Dada was my real friend, my real link to India, and to everyone there. Since that day my feelings for India have changed dramatically. He was India for me; my emotions are no longer the same; I have lost a good part of the depth and the closeness that was there when Dada was there. However, just remembering him makes these feelings return. I feel proud to be an Indian, especially because of him.

Soon after I landed in Chicago, I purchased an air ticket to go to India. I also had to get a new Visa; although it was a Saturday, the Indian Consulate in Chicago was able to issue me a Visa the same day. I reached the home where Dada had lived before his death. It was my most difficult visit to Allahabad, and, I cannot describe it in words: my entire life with Dada flashed before my mind's eye—every little thing! It was an end of an era in my life. Dada was everything, and now I had to live without his physical presence.

Rajni and I were married in Urbana, Illinois, on October 24, 1957. Unfortunately, we could not visit India until the middle of 1961

after we both had finished our PhDs. In September, 1961, I started teaching at the University of Illinois, and we have remained in Urbana ever since. I feel fortunate that Dada and Bhabhi visited Rajni and I twice in the USA. Some of the photographs of their visit to USA, especially to Sanjay's wedding, in California, are reproduced in Part C of this book.

I consider all the positives in my life as a Tribute to Dada. I repeat that Dada was my real Mentor, my Guiding Spirit, and one who has made me what I am today in both my personal and academic life.

This book was planned by me, 10 years after Dada's death, as my personal offering to his memory. It was a shock to me that my Dear Bhabhi left us the same year (2007). I expect that this token of my love and respect, for both Dada and Bhabhi, will reach all their loved ones in 2010.

1. *Amma and Babuji: Our Life at Allahabad* (Govindjee, Ed), March 2007, PDQ Printing, Urbana, Illinois, USA.

A Tribute to My *Mami* (Maternal Aunt) and Dada, My *Mama* (Maternal Uncle)

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In this short essay, I pay tribute to both Dada (Krishnaji, my *Mama*, my maternal uncle) and *Mami* (Shrimati Bimla Asthana, or Mrs. Krishnaji, my maternal aunt). My mama and mami were exceptionally beautiful couple. I had a special relationship with my mami and, thus, I will write about her first. I remember her with great fondness.

My Mami

She was the most beautiful looking lady I have ever seen and met in my life. She had fair and velvety skin that glowed and as a child I used to think that she had come straight from the heaven. Her generosity and kindness were exceptional. She was a very dignified lady.

My relationship with her is special because she always looked upon me with a favor. I felt I was always given preference over the others.

Every time we were in Allahabad I got to help her in doing things in the kitchen, with shopping, and in other activities such as knitting, sewing and picking stuff from the garden courtyard. She would dress me up in different ways e.g. in a *Sari* or *Shalwar-Kameez* or *Ghaghra*. She would get my finger nails and toe nails painted and have Henna applied to my palms. I loved being pampered in this fashion. She would let me buy bangles. I did everything in Allahabad that I did not get a chance to do in Bhagalpur, Bihar, where I lived with my mother (Malati) and father (Radha Krishna Sahay). I enjoyed my visit to *mami* thoroughly.

On our visits to Allahabad, she would prepare special meals and

spend her time looking after us and making us comfortable. She herself would go to the shops to get presents for us. She cared for us a lot. There were no flaws in her arrangements. Everyone depended on her and no one questioned her.

I remember once when I was visiting Allahabad for my eldest cousin's wedding: Mami was busy performing various ceremonies. Suddenly, during one ceremony, where everyone's feet were painted red she looked at me, smiled and said, "You are growing into a young lady now"; then she turned to my mother, "You should look for a boy for her now and get her settled in marriage". Her comments sent a thrill in me, but I knew that I wanted to complete my studies before any wedding bells would ring for me.

On another occasion we were travelling from Allahabad to Delhi by train to receive my *mama* (Krishnaji) who was returning from his first foreign tour. It was winter and cold. Trains in those days were not as well equipped in India as they are today. I remember I was very cold and I had huddled into *mami's* arms. She covered me with her shawl. I must have slept. For when I woke up, we were reaching Delhi in the morning. I still had *mami's* shawl wrapped around me. This was my *mami*. Her behaviour towards me was always motherly. She never scolded me and was never angry with me. All I remember is the tremendous love and affection that I received from her.

Unfortunately, in her later life, she suffered from throat cancer. I was deeply saddened by her death in 2007. She is missed tremendously. Her death has left a vacuum that is impossible to fill. I will always remember her with great love, respect and fondness.

My Mama

The late Professor Krishnaji—has left an everlasting memory on my psyche. He was my eldest mama, my mother's eldest brother, Dada.

Memory is like a thread that beads one's inner experiences: The stronger the thread the more everlasting the memories. Just as the blowing wind draws different shapes over the sand dunes and the seas, life experiences create memories that bring together a harmony parallel to nature itself.

I write of Krishnaji, my eldest mama with feelings mixed with fondness and regard. He was popularly known as Dada by all. For as long as I can remember, he had been the constant contact from my mother's side of the family. Be it on any occasion, any time of the year or any situation, he was the one person I know and remember was thought of always at the first instance. There was no superficiality in him, only pure humanity exuberating love, kindness and strength. I have held him in high regard since my childhood.

I wish to share my personal memories of *mama* that I hold very dear to my heart. These memories are of a person, who could carve life's path itself, not just his own, or his family's, his student's or anyone else's. His unique quality of depth of understanding, his sheer intelligence that can be described as that of a genius, his academic excellence, his social propriety, his fine mind with its unique blend of scientific purity with an acceptance of the rest that was around him relates a story that is told once in a few generations; moreover, it needs to be told over and over again.

Krishnaji's personality carried a charisma that is God gifted to a handful in every generation. Not understanding the depth of *mama's* character as a child, I am sure that I missed to appreciate him as a person then. As I have grown older, I became aware of his personal qualities and a personality that was unparalleled but revered by many at the same time. I later understood and appreciated his perspectives on many issues and his many contributions to the family, to science and to society at large.

Mama was a complete and an *undivided* part between the two families of my father and my mother. And being that, he always strived for unity. He was a truly remarkable man of integrity and intelligence. I say all of this with absolute truth and honesty.

As a child, I travelled to Allahabad quite often with my parents and my two younger brothers Anshu and Anat. For the first 12 years of my life, only the four of us, my parents, me and Anshu, would travel. Then Anupam (Anat), my youngest brother was born and he joined us on our journeys. We were always welcome in Allahabad. I thoroughly enjoyed these countless train journeys. My face would light up when the train reached the station and no sooner I saw *mama*

I would start jumping up and down, sometimes holding my mother's sari and sometimes holding my father's hand. I remember being carried in *mama's* arms and I loved it. All these thoughts have taken me back to a time that makes me feel like a little girl. I remember having a wonderful time with all my cousins, playing a lot, receiving gifts galore and making mischief. Most of all, not being told off was the best part of it. During summer, we would climb the mango tree in the courtyard and pluck small, unripe mangoes and eat them with salt and chillies. During the day time, there would be intense heat and we were specifically told not to go outside but nothing would deter us from venturing out. Then, in the evening a vendor would come with various snacks like *Chaat*, *Golgappé*, sweets and we would fill ourselves with snacks. Sometimes in the evenings we would travel to the *Civil Lines* to see a cinema and eat ice-cream in special restaurants.

Then, there were times, when we would walk from home to the nearby cinema to see a film and have snacks on our way back. How we would still be hungry by the time evening meal was served remains a mystery to me till today. At night, our beds were laid outside in the Veranda to bring respite from the heat and help us sleep. Sleeping outside and not in the rooms was an attraction that I looked forward to whenever we visited Allahabad.

Mama was there all the time. He hardly ever said 'No' to us. He oversaw all the arrangements. His presence is imprinted on my memory as words inscribed on paper via carbon. For me, he is synonymous with Allahabad. I find it difficult to separate the person from the city: A beautiful city with a pious confluence (*Sangam*) of 3 rivers Ganges, Jamuna and the invisible Saraswati. How everyone looked upon an elder like Dada for everything simply illustrates a fine but powerful example of social sensibilities that he championed all his life.

Every time we were about to leave Allahabad, *mama* would say to my *mami* (his wife), "What have you bought for Anju? Only one gift, No, No, please go on and get her a few more gifts. She cannot go back to her home like this". Later, I learnt to anticipate, what he would say or do on my/our departure from Allahabad.

When I first visited Allahabad with my husband Ashok in July 1978, we were welcomed at the station by a party that included *mama*, *mami*, Deepak Bhaiya, Ranjan Bhaiya, Chitra, Manju Didi (Manjudi for short) and many more members of the family. Unfortunately, Deepak Bhaiya, Ranjan Bhaiya and Manju Didi are no more. We were showered with love and affection and embraced in the family, not to mention the numerous gifts that we received. No one questioned our way of life, our set ways, our thinking, our failings or our idiosyncrasies that are many.

When Ashok was travelling abroad for the first time, *mama* was in Delhi. When I was travelling with my daughter Neha for the first time, *mama* was at the airport and he made sure that we didn't have to worry about anything. The truth is that every time I have travelled from New Delhi, I depended upon *Mama*. His contacts were many and people rallied around him with respect and affection.

Such are the memories of my *mama* and my childhood. Memories filled with overwhelming love that I feel and have received from *mama* and everyone else, a reality that stands true even today. I knew that I could always go back to Allahabad then.

I am a student of Arts. Both my parents (professors of Hindi) established exceptional artistic footprints on me from my very childhood as they themselves come from an exceptionally talented background of Art and Literature. Hence, the influence of their joint talents was a natural phenomenon that has been an integral part of me for as long as I can remember. Nonetheless, I have been deeply inspired by the scientific background of my maternal family and my three maternal uncles. Krishnaji, of whom, I am writing about was a scholar of Electronics/Physics with a clear mind. He was an authority on Microwaves in India and received the Sir C.V. (Chandrasekhar Venkat) Raman Award for his pioneering work, from the then Prime Minister of India, Mrs. Indira Gandhi. I was fascinated by his knowledge of Science and Physics.

A Subtle Reflection: During my last visit to India I met *mama* in New Delhi with my husband. I remember asking him about “Quantum Physics” and his explanation mesmerized me. He spoke to us for over an hour and then suggested some readings. Later, he presented

me with a book to keep that he had co-authored that I will treasure always. Regretfully for me his company for such occasions was rare.

Moreover, my life has also definitely been influenced by my other two maternal uncles, Gopalji, also with a Physics background, and an Executive Director of Engineering Projects, and Govindjee, a scientist of repute and an eminent figure in the field of Photosynthesis. All of them have helped me understand science and its practical applications in their own individual ways. I remain indebted to them all.

I was shocked when I learnt that my eldest mama (Krishnaji) had passed away after a stroke on August 14, 1997. His loss is felt immensely. The vacuum created by his death infuses only sadness in me whenever I think that he is not going to be around when I visit Allahabad next time. I will always remember my mama with special fondness since the memories associated with him are poignant. He was a very special person and a super human being. I have remained and will remain deeply influenced by him for the rest of my life.

The circle of life rolls again, only this time there are new players who are joining the bead game.

Papa (Professor Krishnaji) and Mummy (Mrs. Bimla Asthana)

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As I write about Professor Krishnaji (whom I call Papa), I am overwhelmed with respect for him. I love and respect him so much that I can't explain it in words.

I am the wife of the late Raj Ranjan, the second son of Papa and Mummy. I saw Papa at the Allahabad railway station for the first time. The talks of my marriage had just started. I was going to Delhi with my Papa, my Mom and Putty *Mami* (maternal aunt). I met Ranjan's Papa, his Mummy (Bimla), his elder brother (*Bhaiya*) Deepak (Deep Ranjan), his sister-in-law (*Bhabhi*) Madhulika, and his younger sister Chitra, all at the same time.

Papa

After my marriage, when I went to live with my in-laws, I found that all my in-laws were very nice. I liked them very much and I felt the new home to be my own home. I received so much love from Papa that I never felt the pain of leaving my mother and father. Papa was open- minded and was a very friendly person. Mummy was a distant elder cousin; thus, Papa used to tease me by calling me "sister-in- law" (*Sali*). Papa used to talk with so much love and openness that I never had any hesitation in discussing anything with him. I used to have long discussions with him and he used to tell me stories of the past, like the marriage of Govind Chacha (Govindjee). Papa told me about Amma (his mother). That a son can love his mother so much, I came to know for the first time. He loved his mother a lot and used to say that everyone should love his/her mother.

I don't know who told Papa that Mummy will not live for more than two years. He used to tell us to take good care of her. This was in 1995; he believed in horoscope (*Janma Patri*). When he went to Maharshi Nagar (where Mahesh Yogi lived), someone there may have told him that Mummy will not live long. Papa used to take good care of Mummy; he always took care of her conveniences, never forgot to give her medicine at the right time. He used to say that if something happens to your Mummy, I will live with my children. But, as fate will have it, he passed away in 1997, before Mummy did.

On 7th of February 1993, we had a car accident. When I got back into senses, it was Papa who told me about the loss of Ranjan (my husband). It was Papa who helped me face this loss and he was my biggest support. He took good care of me when I came back home from the hospital. He himself used to give me medicine on time. Mummy, Papa and Meenu *Bua* (Ranjan's older sister) all took good care of me. I can't express their love in words. It took months for the doctor to make me stand on my feet and when I was able to walk, it was Papa who used to hold my hand. I could not gather courage to hold anyone else's hand than Papa's. Papa helped me to walk daily in the mornings and evenings. Soon I was able to walk on my own. Papa at that time had just come back from Maharshi Nagar. He didn't go back to work and told me that he will look after us. We stayed one year in Lucknow and then came to Allahabad where he and Mummy looked after me, my daughter Tanima and son Sanket.

When we were moving from Lucknow to Allahabad, Papa personally directed the loading of our belongings and our dog Bruno was also going to Allahabad in the same hired truck. Just around the same village (Harchandpur) where, one year ago, we had our accident (10 km from Raebareli), Bruno jumped from the truck and ran towards Lucknow. The person from Ranjan's office, who was also in the same truck, searched for Bruno everywhere; he even announced to the people around that there would be a reward to the person who finds Bruno. But, Bruno was not found. Next morning in Allahabad when Tanima and Sanket found out that Bruno was lost, they were very unhappy; Tanima cried a lot as Bruno was her pet dog. Hearing all this, Papa promised to bring him back. After a week, Papa, along with Mummy, went to Raebareli. Mummy stayed with someone at

Raebareli, and Papa hired a *Tempo* to Harchandpur, where Bruno had jumped from the truck. After inquiring in the village, he found out that a young boy had found the dog and had kept him tied at his home; this must have saved Bruno from being attacked by other stray dogs. Papa returned, sitting, with great difficulty, at the back of the *Tempo*, as Bruno, being scared, was scratching Papa with his nails. Papa showed his true love to our kids, and kept his promise by bringing Bruno back to Allahabad.

Papa gave me lot of support but he wished that I become independent and be able to take care of my 2 kids. My younger brother (Rajey) used to live in Delhi. He wanted me and the kids to stay with him in Delhi. But Papa told him that he wishes to see me independent and develop self confidence. Papa told me to stay in Allahabad till kids grow up, then I can live wherever I want. I stayed in Allahabad.

On 12th of August, 1997, Papa and Mummy took me, Tanima and Sanket to an Eye specialist. We talked till it was late in the night; he told me that he will get me spectacles (glasses) the next day. The same night Papa fell ill and was admitted to the hospital. On the 14th of August 1997 in the morning, he passed away.

After the demise of Papa I felt lonely and helpless for the first time. But Papa had already filled enough courage in me; my both kids were able to complete their education. My daughter Tanima is now working after completing a course in Computer Engineering. She is in USA right now. My son is working on his BCA (Bachelor in Computer Applications) degree. Papa and Mummy are not with us anymore, but my kids and I have their blessings.

Mummy

Mummy was a very simple and lovely person. One can see her and tell how lovely she was. She used to be a quiet person; she spoke very little. I don't remember that she has ever called me for anything, even a glass of water or a cup of tea. She didn't have the habit of asking anyone for anything; she used to do everything by herself. I used to knit a lot with Mummy. When we were together in Lucknow and Allahabad, we knitted a lot of sweaters together. She loved knitting and used to knit many sweaters every year.

What Mummy did for others I don't know but she helped me a lot. At the time of Sanket's birth I had some problems during my pregnancy and the doctor told me to rest for sixteen hours a day. At that time Mummy came to Lucknow and lived with me. She took care of the household. She used to water the house plants, and bring milk from the neighborhood store. She did all this for three months. My neighbors could not believe it; she was my mother-in-law, not my mother. Doctor had told me to lie still and not change position, which caused great pain in my back and legs. I never knew that to lie down can be really so painful. Mummy used to massage my back and legs; when I now think of it, I feel enormous respect for her. She was truly my mother. Mummy did so much for me and I could do nothing for her except loving her.

When I came back from the hospital after the accident, I couldn't stand for a month; only much later, I started walking. Since the house in Lucknow was old fashioned, there was no attached bathroom, a makeshift commode was made and placed in the room for me. Mummy used to wash it herself and didn't let anyone else to do it. What else can I say: she did so much for me that I don't have words to express my regards for her. There has always remained love and respect for Mummy in my heart.

First in Lucknow and then in Allahabad, Papa and Mummy remained with me in the beginning. Then they shifted to the upper floor of the home (M-40 Govindpur) of my brother-in-law (Late Deep Ranjan, who sadly passed away in 2008). When they were there, they used to come nearly daily to my place (M-100 Govindpur). Mummy used to come alone after the demise of Papa in 1997. She used to go to market with me when needed. Madhulika (Madhu Bhabhi) was teaching in a school and, thus, didn't have enough time for other activities. I was at home and, thus, could go everywhere with Mummy.

When my kids grew up, I came to Gurgaon for their studies; then, Mummy was very sad. She remained with Deepak Bhaiya and Madhu Bhabhi. When Mummy fell ill, Bhaiya and Bhabhi took care of her. Then Deepak Bhaiya took her to Delhi at Meenu di's place in

Delhi. Meenu's husband Dr. Suresh Chandra is a doctor, and, this was helpful. I, together with Tanimma and Sanket, could visit Mummy only once during that period. It was as if Tanimma had just come to meet her *Dadi* (grandmother) from America. She had to go back to America after meeting Mummy and the day she reached USA, Mummy had passed away. That was on 18th of April 2007. Mummy loved all the kids.

My Childhood Memories of Dada and Bhabhi

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I was born on 18th of December, 1958, at 14B Bank (Ram Narain Lal) Road, in Allahabad, where my parents (my father (Papa) Gopalji and my mother (Ma) Nirmala) were living in a joint family in the house of Prof. Krishnaji, my older uncle; all the family members fondly called him Dada whatever their age or generation may be. My father left for USA for higher studies immediately after my birth and my mother and my elder sister (Late Manju Didi) were looked after by Dada and my aunt, whom everyone called Bhabhi. Never did any one of us felt at any time that we were alone and the love and affection bestowed on us was great.

We also called them Dada & Bhabhi from the time we can remember and even their children (my cousins: Meenu, Deepak, Ranjan and Chitra) used to call them Dada and Bhabhi; they started calling their mother Mummy at a later stage. We stayed in Allahabad till 1963 when my father returned from USA and then we shifted to Delhi and then to Kota in Rajasthan. Our bonding with Dada and Bhabhi was so strong that we used to visit Allahabad every summer vacation for long stays. I remember a story: I used to have a big “fight” with my cousin Chitra (Dada and Bhabhi’s youngest daughter) for just cooling, with water, the *Aangan* (courtyard) in the summers, of course; we had decided that we will each water half of the courtyard, but one of us watered it more than agreed and we would start fighting over it and pull each other’s hair; then, Bhabhi would come and separate us.

I am also told that when I was born on the 18th of December at Allahabad, it was very cold, as all of Northern India was. The ritual was that no clothes are prepared for the unborn child till he/she arrives.

So Bhabhi knitted a full sweater for me overnight. I was also told that Bhabhi has breast fed me when I was very small, so I always had a biological bonding with her.

I was so enamored by Dada and Bhabhi and the environment of our house at Allahabad that when Dada & Bhabhi returned from a trip to Australia, in 1971, I started saying that I will live with them in Allahabad already from the hour of their arrival at the Delhi airport. I was so adamant that in spite of my parents' refusal, I requested Dada and he agreed to it. Dada obtained my admission and that of Chitra in St. Anthony's school at Allahabad. We had a rickshaw-*wala* hired to take us to school and bring us back home. I can never forget that year of my life. For every small thing, I used to go to Dada and my problem used to get sorted out whether it was a fight with a classmate or any teacher's scolding. Dada had an answer to every problem. I remember Bhabhi's love and affection when I used to sleep without eating dinner; she would feed me during my sleep and I used to eat the full dinner! However, on the next morning, I would say "I did not eat my dinner last night". I also remember the tips given to me as a growing up teenager by Bhabhi.

Dada & Bhabhi always visited us at our Hauz Khas house in Delhi. When the proposal for my marriage was received, it was Dada who discussed all the matters of marriage proceedings with my future in-laws, as my parents were stationed at Baghdad, Iraq, then. My '*Kanyadaan*' also was performed by Dada & Bhabhi. We all looked towards Dada as the pillar of the family. Every one including my father took his advice whether it be changing a job or any other family matter.

I remember going along with the family when he was given the Sir C.V. (Chandrasekhar Venkat) Raman award by the then Prime Minister of India, Indira Gandhi. We are so proud of it. Whenever an opportunity comes to tell about my family I never forget to mention it in my friends' circle.

It was very unfortunate that I could not see Dada when he died. We are very proud of him and will always remember him. In fact, I feel that he is still with us.

On Papa and Mummy

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I am the youngest daughter of Professor Krishnaji (*Papa*) and Mrs. Bimla Asthana (*Mummy*). I am not sure where to start my recollection. The earliest memory I have is from when I was 5 or 6 year old, when *Dadi* (Mrs. Savitri Asthana, my grandmother, mother of my Papa; see *Amma and Babuji: Our Life at Allahabad*¹) had passed away. I remember Papa crying in the room where her body was kept on ice, which later became my room. I only remember two occasions when I saw Papa that vulnerable; when Dadi had died and when I was given away at my marriage on my '*Vidayee*'.

On Papa

Papa has always been a constant source of strength and courage for me. Even today when I have problems or issues to resolve, I think of him and how he would have handled it. I have the highest regard and admiration for him. In my mind no one can come even close to the place he has in my heart. I always tell my kids about all the good deeds he performed for everyone who came in contact with him. His cool composure and tenacity always left me in awe. How could one human being do so much and still have time and patience for someone like me who constantly bugged him with questions. I was not scared of him but knew my limits and boundaries, most of the time. We all knew what was right and wrong in his dictionary and I tried my best not to re-define them!

Papa hardly ever got mad at me. I don't remember being punished even once. One incident does come to mind that shaped how I viewed "bad words or swearing" so to speak. Even today I am most uncomfortable with words that have negative or swearing like connotation. I don't exactly remember how old I was but could not

have been more than 5 or 6 year old when the following incident took place. We had a lot of help around the house and I used to play with the kids of these helpers, since my siblings were much older. I picked up some words from them that would be considered extremely mild by anyone else's standards but not by Papa. I was sitting in the back verandah (in 14 B Bank (Ram Narain Lal) Road, Allahabad) and trying to break an earthen '*Diya*' with a stick but the '*Diya*' was quite strong and I was getting frustrated, so I used one of those words and Deepak Bhaiya (my oldest brother, who, unfortunately, has passed away) heard it. He, like a true sibling, casually mentioned it when Papa was around and Papa took my one ear in his hands and just looked at me and said to never use 'bad/offensive' words in any circumstances. I don't remember his exact words but the feeling, that it is so wrong to use a language that is offensive in any circumstances, has stayed with me and it upsets me to hear that from anyone. [The funny thing is that one of my younger colleagues has experienced my displeasure with such language and refrains from using such language when I am around.] There was another time when I saw Papa really angry. Ranjan Bhaiya (my older brother, who is sadly no more) had gone to visit his friends at some hostel and did not return until midnight. Papa probably would not have been bothered if it wasn't for Mummy throwing up and crying as if something had happened to Bhaiya. (I can fully relate to that now as a mother.) Papa closed all the doors (and we had many at 14B Bank Road) except his own and kept working on the bed. I was so terrified of the wrath that was about to come rolling down on Ranjan Bhaiya, that I went to the farthest room, away from Papa and closed my ears. After that incident, Ranjan Bhaiya never stayed out late without informing at home.

When we were in Australia during 1970-1971, Papa took me once to a Hair Dresser to get my hair curled. My kids cannot believe that their *Nana* (their mother's father) can do something like that. My husband will never do that for our daughters. Papa would let me wear clothes I would not let my kids wear now. Mummy was not too happy on those occasions. Short red leather skirt and white leather boots! I could go wherever I wanted or do whatever as long as I had a chaperone or it was safe for me. Papa would take me to the circus and magic shows. I remember going to the famous magic shows of

P.C. Sarkar (Protul Chandra Sorcar; see <http://www.pcsorcar-magician.com/bio.htm>). Papa would entertain almost anything coming out of my mouth for discussion. What I have learnt from just watching him is more than any institution or book can teach. I don't think I will be exaggerating if I call him an institution.

I remember an incident when I was in high school (1976) where he had to juggle between being a concerned father and being 'fair' and 'reasonable'. I was selected to play Table Tennis at a state tournament at some place unknown to me (I think it was Rampur). Most of the team was going by train but few people were going by their own car with their parents. Since Papa knew that family, he wanted me to go with them. I was not very fond of those 'rich snobbish' people; I argued with Papa and stopped eating unless he could convince me that his reason for not letting me go by train had some merit. Papa then called my coach who was a Muslim gentleman and told him that the only way he would let me go by train is, if he took responsibility for my 'safety'.

I think we all knew what was right and wrong in Papa's dictionary but it didn't keep me from doing some things that I was not supposed to do because I didn't see anything wrong with them. But all such endeavors ended in his favor without him saying or doing anything. I give here a few examples. I was not allowed to ride a bike on the main road whereas both my brothers (Ranjan Bhaiya and the eldest Deepak Bhaiya) were. I considered it to be *not fair*, so I took my friend Poonam's bike and went on the main Bank road towards the intersection of Katra market. There was a big circular construction called "*Gol chakkar*" where I saw the Vice Chancellor's car with Papa in it. I was so terrified that he will see me that I lost my balance and fell on the road. He did not see me but I never took a bike on the road again. Another incident that I remember took place when I was studying at Allahabad University. My friends and I once decided to skip our Statistics class taught by Dr. U.N. Agarwal at the University. We left the classroom 10 minutes before Dr. Agarwal's lecture was scheduled to start. After 5 minutes, I said 'Dr. Agarwal will definitely tell Papa; and it will not look good that the Pro-Vice Chancellor's daughter was skipping his class'. (Papa was then the Pro-Vice Chancellor of the University.) I did not think about being scolded but

what will people think about Papa and we all walked back to the class. I once jumped over the boundary wall of our house to get to the class because it was shorter and Papa found it out. He said that how he can enforce discipline to students in the university if his own kids did not follow rules!

I don't think Papa feared anything. Here is one incident: when he was the Pro Vice Chancellor of the Allahabad University, a large group of students came to our house protesting something. I can't remember what it was about. Papa was in his office at that time and my older brother, Deepak Bhaiya was not at home either. So, just women and children were in the house. The angry students turned off our electricity from the main box and gathered outside the house, and on the lawn, screaming and yelling at the top of their voice. After sometime, Papa arrived in the university car and some students decided to lie on the ground just before the car arrived in the driveway. Without fear, Papa got down from the car, and walked with the students and invited their leader in the living room to talk. The electricity was turned back on and Papa asked the servants to give water to all the students as it was very hot that day. I witnessed this in amazement. I don't remember what the issue was but they all went away peacefully. That is the kind of effect he had on everyone. Anyone who came in contact with him could not forget him. Quite often I will meet random people who would turn out to be Papa's ex-students (20-30 years ago) but they would still remember him and show the highest regard for him.

Now about his generosity. I can hardly remember ever being just by ourselves at the house on 14B Bank Road; many relatives lived with us. That was such a normal lifestyle for us. Everyone living with us was like our immediate family. I always found Papa to be extremely generous and giving of his time, energy and money. I remember that he would put away a small amount from his salary in some sort of a trust for the needy/poor students who wanted to go for higher studies.

On Mummy

I don't think there is a safer haven than mom's "*pallu*" (the end of a Sari). That is how I grew up, feeling safe, secure and loved.

Mummy was an epitome of love and affection and the amount of patience she had with me and everyone and everything around her was unbelievable. I would very often go to sleep with her and pull her “pallu” to cover myself despite having my own blanket. She was very emotional and paranoid about our safety and well-being. The incident regarding Ranjan Bhaiya mentioned above is an example. I don't remember any incident or event involving Meenu Didi (my older sister) and Mummy or Papa. I do remember sitting on Mummy's lap while riding on a rickshaw to Didi's in-law's place in Allahabad. I, however, like to mention a incident during my 2004 visit to Delhi where Meenu Didi now lives. Mummy was visiting Didi, in New Delhi, as she would usually do in the winters. Even though she was quite old, she went with Didi and I to the Sarojini Market to buy me a nightgown because she knew how much I loved those from India. I tripped in the market and fell flat on my face on pavement stones. I lost consciousness for maybe few seconds or so it felt like. I got bruised on my lips and nose. *Didi* and mummy picked me up and sat me down on a stool at a shop and the shopkeeper gave me water. The loving look on Mummy and Didi's faces made me forget my hurt and pain. It was like: ‘we are here, no need to worry about anything’. Mummy mentioned that a homeopathic medicine *Arnica* would help if we had any and *Didi* went rushing through the market to find some. When we reached home, Mummy and Didi were so concerned that they mentioned it to my *Jijaji* (Dr. Suresh Chandra, MD, Meenu's husband) as soon as he came; he personally gave me a Tetanus injection. Even at age 44, I felt like a child in safe hands.

I miss Mummy's food and hysterical laughter and concern for me. I think I have inherited her hysterical laugh. She had a “thing” for house lizards. It always ran a chill down her spine if she saw one on the floor. Both my brothers very often used that to have a good laugh at her expense. Once she was cooking and Ranjan Bhaiya made a lizard (*Chhipkali*) out of the *roti* dough, using black pepper as eyes. It looked quite real. He placed it quietly behind mummy on the floor and said “*Bhabhi*, I think there is a *Chhipkali* behind you.” [Both my brothers called our mother *Bhabhi* as she was called by all others.] Mummy, before even actually seeing the thing, started jumping up and down, screaming and then her scream turned into a hysterical

laughter when she realized it was a fake lizard and she couldn't stop for a long time.

Every time I visited India, she would make sure I get my favorite foods, e.g., "*Phara*", Jackfruit, *Arvi*, and *Chaat* . Her passing away is too fresh in my mind to write much in the past tense.

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1. *Amma and Babuji: Our Life at Allahabad* (Govindjee, Ed), March, 2007, PDQ Printing, Urbana, Illinois, USA.

Professor Krishnaji (Dada) As I Knew Him

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My encounters with Prof. Krishnaji (Dada), if I may call it so, were few and infrequent before and after the wedding of his niece (Ila, daughter of his younger brother, Mr. Gopalji) with me. My marriage took place on the 22nd of January 1987, in New Delhi. Right from the time of negotiations of my marriage, to conducting the rites and the rituals and extending hospitality to all concerned, it was Dada all along. This is not to belittle the role played by all the other senior members of the family. Every meeting and the time spent was an unforgettable experience. He resembled my father in many ways. They were both born leaders who carried strength of personality and depth of gravity in whatever situation they were placed in. One could unhesitatingly share one's problem with them and one would be instantly relieved of the burden, as it would become their own.

I have some anecdotes to share with the readers of this tribute to Dada; he accompanied me on a United Nations (UN) assignment to Shimla (formerly, Simla), Himachal Pradesh, with an overnight halt at Chandigarh (Punjab) on the way. [During the British Raj, it was their summer capital; it was also called "Queen of the Hills".] Needless to say that a group of students and professors from the Punjab University called on him as the news of his visit became known. We were taken good care of in the University Guest House while those known to him came to share their experiences in their capacity as teachers or students. We had a similar experience at Shimla where he was reverently invited to deliver a guest lecture. I was leading a team of sociologists, consultants and field investigators in Himachal Pradesh for a United Nations (UN) sponsored project. Dada was unhappy with our choice of a senior sociologist but appreciated my

honest admission of wrong selection. When my father-in-law (Gopalji) was suddenly struck by acute food poisoning during our Shimla visit, Dada immediately made appropriate decisions.

Two more incidents at Delhi remain etched in my mind. We once went to meet the Secretary to the Government of India who headed the Department of Higher Technical Education. The protocol demanded that we take a security pass and that the receptionist inform the official about us. Although many senior bureaucrats in India are known for their vanity and, as some would say, “*nose-in -the air attitude*”, the officer hurried down two flights of stairs and touched Dada’s feet (to show his respect to him), while reprimanding the receptionist for not informing him early enough. Another incident was at an office where a Chief Executive Officer (CEO) of a large Government establishment was housed; this officer was once Dada’s student at Allahabad University, who seemed to have forgotten all the help he had received from Dada, and made him wait outside his office for a very long time. Dada, without raising his voice, commented in an effective and tactful manner, on this behavior, which I am sure this CEO would not have forgotten easily. To this day people who knew Dada talk about him with respect and gratitude as an outstanding academician and an able administrator who brought the best out of even the average student.

In the evening of his life, it seems that the “*roar of the lion*” had mellowed down. The death of Dada’s younger son (Ranjan), at the prime of his life, in a car accident, left a young widow (Poonam) and two small children (Tanima and Sanket) to be looked after; this sudden loss of his son had taken its toll on his life. He took charge of this very sad and unfortunate situation and did whatever was possible for him to do to rehabilitate the heart-broken family. The sorrow that had engulfed him was visible on his face as well on the way he interacted with the others. Family dynamics also weighed on him heavily dragging him in financial obligations which were not of his making. His failing health and demise was, truly, the fall of an institution. Memories of a person like Dada can never be obliterated.

In spite of the family and financial responsibilities, Dada maintained a side to his personality which he retained till the end of his life. Among many others, I am able to recall a few instances during

his assignment as Advisor to Maharishi Mahesh Yogi's enterprise, the ambitious *Vedaland* (similar in a remote way to Disneyland) to be set up at Noida, a town in Uttar Pradesh (UP), India. A Canadian illusionist Mr. Doug Hennings was hired to work along with Dada and was staying on the same Campus in the *Ashram* (abode of spiritual gurus) at Noida. Doug Hennings was asked to perform a few tricks which he did by taking a few coins and adding many more with a flick of his finger. Dada told him that if he could do the same trick with higher denomination rupee notes it would solve many of his problems. Later an audience was arranged with the Maharishi himself. After introductions, Mahesh Yogi invited me to join the project. To this, Dada remarked afterwards to me that the working time in the Ashram was erratic, stretching late in the night, that there is always a danger of losing one's wife though one may retain his job!

During our visit to Lucknow to attend a function to celebrate the birth of his grandson Sanket (son of Raj Ranjan, Dada's second son), Dada was sitting close to the feet of his wife, affectionately called Bhabhi, due to lack of space; he whispered, jokingly, to me that at times these gestures, no matter how unintentional, help to please the wives. He added that experience had taught him this *mantra* and that it may be useful to me as I was recently married.

I end this tribute by paying homage to this unforgettable wonderful human known to most as Dada, the universal Dada.

My Childhood Memories of Badé Nana (Professor Krishnaji) and Nani (Shrimati Bimla Asthana)

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I may not have spent much time with Badé (elder) Nana (grandfather from mother's side) and Nani (grandmother from mother's side) in comparison to the rest of the family members, but as a young child, I always felt what loving souls they were. (Actually, they were grand uncle and grand aunt, but in our tradition, they are considered grandfather and grandmother.) I have memories of them from when I was only 6 year old; this is when we lived in a house in Hauz Khas, New Delhi. I, especially, remember the day when I graduated from the Kindergarten to go to Grade 1. Badé Nana made me feel like I had really accomplished something and what a big girl I had become. This still puts a smile on my face when I think of it.

I remember visiting Nana and Nani when they lived at the Maharishi Mahesh Yogi Ashram. Even though the Ashram was located in Noida, Uttar Pradesh, that city was not developed like it is today; thus, the Ashram always seemed like we're going to some faraway place with stretches of empty land in between.

I remember Badé Nana used to live quite a disciplined life. He had a fixed time in the evenings to meditate and the visiting kids were asked to keep quiet for one hour. I don't remember if he meditated in the mornings too because obviously no kid would be up at 5 in the morning. And the other thing he would do was to have only fruits for dinner.

Once we visited them especially because it was Badé Nana's birthday. We arrived at the Ashram a day before. By "we" I mean me and my grandparents Gopalji Nana and Nirmala Nani. My parents

(my Mom Rita; and Dad Shekhar) and I actually resided in Muscat then. I used to visit my grandparents almost every summer vacation. Let me not digress. On the day of Badé Nana's birthday (I have no clue what year it was but I must have been about 8 or 9 year old), I wanted to give him something as a gift as birthdays were synonymous to birthday gifts! So after pondering for a while, I went out to the backside of the house which was lined with trees with pretty red flowers. Needless to say that I was too small to reach the flowers which were still hanging off the branches; I had no option but to pick the freshest of the flowers that had fallen on the ground. I picked them up and made a bouquet out of them and presented it to Badé Nana. He was extremely happy to receive this gift, and hugged me and pecked me on the cheek. He was always very affectionate.

Badi Nani, who has also passed away, was loving and affectionate in her own ways but not as outwardly as Nana. She was always taking care of the children. My first memory of her is from Hauz Khas days when I was only 5 year old. My brother (Nitin) was just born, so my Nani (Nirmala, my mother's mother) was busy taking care of my Mom (Rita) and brother, and my Mom was obviously fussing over my newly born brother. Thus, Badi Nani would take care of me; she would feed me in the afternoons; I remember that she used to give me huge morsels of *khichdi* and I would complain and try and talk while I had food in my mouth. I'm so glad that she was able to attend my wedding with Tanu, in February 2006, and to give me her blessings. Before that she had visited us a couple of times in Gurgaon and Delhi and she used to sleep in my room at night. After she took her night medicines, we would chat for about half an hour or so before she fell asleep. Her other pastimes during the day included watching TV and knitting. I'm sure all the grandchildren and even some adults own at least one if not more of her hand-knitted sweaters. Badé Nana and Nani, we love you both.

Part C

Photographs of Professor Krishnaji : *Academic life and his family members*



The Krishnaji Family. *Front row (left to right):* Chitra, Bhabhi (Bimla), and Meenu (Ira).
Back row (left to right): Dada (Krishnaji), Ranjan and Deepak.

We present below photographs related to the life of Professor Krishnaji (*Dada* to many). Figures 1-9 have been provided by his students; these provide a glimpse of his academic life. Figures 10-84 have been provided by members of his extended family; these depict not only his life, but of his wife Bimla Asthana (*Bhabhi* to Govindjee and *Jiya* to Shyam Lal, the two editors of this book) and their own.



Fig. 1. Krishnaji (*left*) with Pundit Jawahar Lal Nehru (Nehruji), the first Prime Minister of India. Nehruji was very much interested in Krishnaji's research that dealt with Radar technology for the Defense of India. Under the leadership of Krishnaji, the Department of Applied Physics (now known as J.K. (Juggilal Kamlapat) Institute of Electronics & Telecommunication) was established. His first laboratory of "*Experimental Microwave Spectroscopy*" was inaugurated by Nehruji. Photo, 1956. (Source: Govindjee's Archives)



Fig.2. University of Allahabad MSc Final (Physics) Class of 1959. *Left to right: Front row:* K. P. Tiwari, Shankar Swarup, K. C. Banerji, A. Mohan, Rajendra Singh, K. Majumdar, K. Banerji (Head), Krishnaji, V.D. Gupta, Y.P. Varshni, Hari Mohan, B.K. Srivastava. *Second row:* B.S. Mathur, G.K. Tandon, G.S. Shukla, P. Chand, S. Chandra, R.N. Bhargava, A. Mansingh, B. Raj, R.S. Bhaduria, B.S. Rawat, M.G. Bhattacharaya, V. K. Sarin, A.K. Pant, N.N. Bharthakur, Jag Darshan. *Third row:* S.T.H. Abidi, S.C. Verma, H.R. Pandya, R.P. Tiwari, B.M.S. Kashyap, J.P. Singh, L.C. Gupta, S.K. Bhatnagar, C.M. Gupta, R. Yamadagni, J.S. Bisht, H.N. Pradhan, A.K. Banerji. *Fourth row:* B.K. Agrawal, A. Chatterji, S.N. Verma, M.N. Bhatnagar, Tuhi Ram, A.K. Mukerji, Chaman Lal, Rajeshwar Singh, Jawahar Lal, G.K. Kapoor, Yogendra Prasad. *Fifth row: Support group:* Ganga; Shuv Harakh; Kanha; Kallu; and Munna Lal. (Source: R. N. Bhargava)



Fig.3. Krishnaji (*right*) receiving the prestigious Sir C.V. (Chandrasekhar Venkat) Raman Award from Indira Gandhi (Prime Minister of India) for his pioneering basic research on Microwave Spectroscopy, Microwave Transmission and Solid State Physics. Photo, 1976.



Fig.4. A group photograph after the reception of the wedding of Abhai Mansingh with his wife Kalpana. *Left to right:* Ranjan, Deepak, Dada (Krishnaji), Usha Saran (Krishnaji's youngest sister-in-law), Bimla (*Bhabhi*), Meenu, Kalpana and Abhai Mansingh; the child in front is Chitra. Photo was taken in Fatehpur, UP; January, 1965. (Source: Abhai Mansingh)



Fig.5. A group photograph taken at Krishnaji's 60th birthday celebration. *Sitting (left to right):* Ramji Srivastava, Dina Nath, Suresh Chandra, Krishnaji (with garland), Baikunth Nath Mishra, Govind Saran Darbari, and Shyam Bihari Lal Srivastava. *Standing (first row):* Gajendra Kumar Johri, Prem Prakash Srivastava, Nabin Kumar Narain, Suresh Chandra Srivastava, Gopal Krishna Pandey, Pradip Kumar, Vinai Krishna Agarwal, and Vinod Prakash. *Standing (second row):* A. K. Srivastava, Mohan Swarup Sinha and Ram Kripal. Photo, 1982. (Source: Pradip Kumar)



Fig. 6. An informal photograph with the former Vice Chancellor of Allahabad University, Ram Sahay (of the Indian Administrative Service, IAS). *Left to right:* Ram Sahay, Uma Shankar Srivastava (USS) and Krishnaji (who had served as Pro-Vice Chancellor with Ram Sahay), and children Shibui, nephew of SLS, and Umang, grand-son of USS. Photo, 1983. (Source: Shyam Lal Srivastava, (SLS))



Fig. 7. A photograph taken during the inauguration of the National Seminar on *Electronics for Teaching and Mass Education*, New Delhi. *Left to right:* Krishnaji, unidentified, Ashoka Chandra, unidentified, Honorable Minister Shiv Raj Patil (the then Minister of State, Department of Science and Technology, Government of India), Uma Shankar Srivastava, Harish Chandra Khare, Raj Narain Kapur and Shyam Lal Srivastava. Photo, May 1986. (Source: National Academy of Sciences, India)



Fig. 8. A photograph taken during the 47th annual session of the National Academy of Sciences, India, at Bhopal, Madhya Pradesh (MP). Kedareshwar (K.) Banerjee addressing the gathering. *Seated (left to right):* Pratap Narain (P.N.) Srivastava, Uma Shankar Srivastava, Krishnaji, Palliakaranai Thirumalai (P.T.) Narsimhan, and Basanti Dulal (B.D.) Nagachaudhuri. Photo, 1977. (Source: National Academy of Sciences, India)



Fig. 9. A photograph at 90th birthday of Neel Ratan Dhar, an internationally renowned chemist at the University of Allahabad. The photo shows Krishnaji (left) congratulating Dhar (with folded hands), Employees of the National Academy of Sciences, India, are in the back row. *From left to right:* Nankulal, Ishwar Din Shukla and Radhey Mohan Srivastava. Photo, 1982. (Source: National Academy of Sciences, India)



Fig. 10. *Top row (left to right):* Bireswar Prasad Asthana (Dada's uncle, Katghar-walé Chacha), Vishveswar Prasad (Dada's father, Babuji), Sidheshwar Prasad (Dada's uncle, Patna walé Chacha). *Middle row :* Shanti Jiji (daughter of Bireswar Prasad; Dada's elder cousin, Jiji), Katghar-wali Chachi (Dada's aunt; wife of Bireswar Prasad), Dada (Krishnaji), Amma (Savitri Devi, Dada's mother; in her lap is Dada's sister Malati), Patna-wali Chachi (wife of Sidheshwar Prasad). *Bottom row(left to right) :* Girish Chandra Asthana (Shivji Bhaiya, Dada's elder cousin), Gopalji (Dada's brother), Rameswar Chandra Asthana (Ramji Bhaiya, Dada's cousin) and Jagdish Chandra Asthana (Munna Bhaiya, Dada's cousin). Photo, ~1930. (Source: Family archives)



Fig. 11. A photograph of Dada's father Sri Vishveshwar Prasad. Photo, ~ 1930. (See 'Amma and Babuji—Our Life at Allahabad' (edited by Govindjee), printed by PDQ Printing, Urbana, Illinois, March, 2007)



Fig. 12. *Left to right* : Dada (Krishnaji), Dada's mother Savitri Devi; in her lap is Malati; Gopalji is sitting on the floor. Photo, ~1930.



Fig. 13. *Left to right:* Gopalji, Dada (in his lap is Govindjee); and Malati. Photo, 1933.



Fig. 14. A photograph of Dada (*right*) with his friend Uma Kant Pandey (*left*).Photo, 1936.

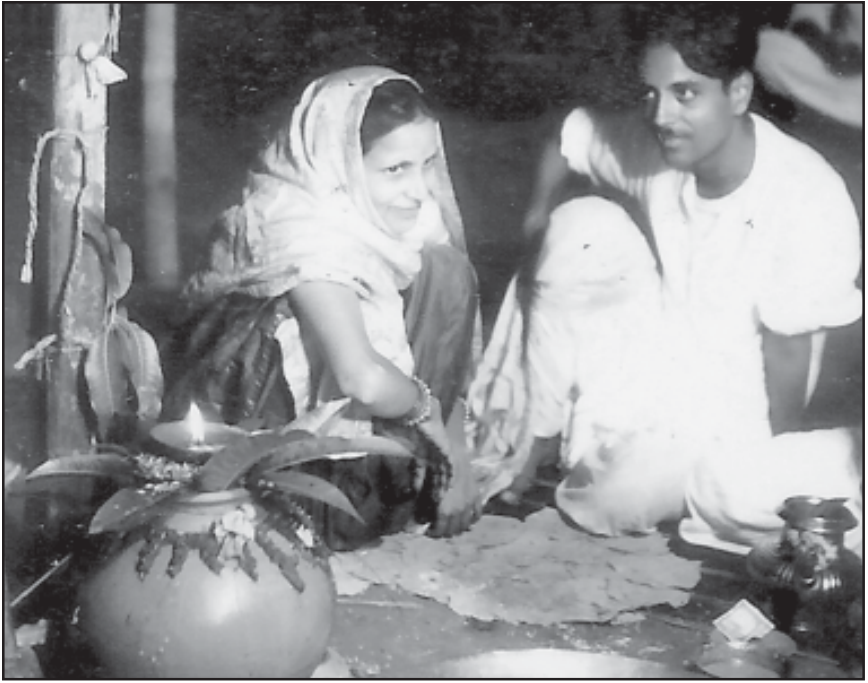


Fig. 15. Bimla (Dada's wife) and Dada under the '*Mundap*' during a ritual at the wedding of Malati with Radha Krishna Sahay. Photo, June, 1953.



Fig. 16. Left to right: Ranjan, Deepak, Manju and Meenu, posing before their clay toys and clay deities. In the front is a clay statue of Mahatma Gandhi. Photo, ~1955. (Source: Govindjee)



Fig. 17. *Left to right:* Deepak, Ranjan, Manju and Meenu donning baseball caps. There must be a story behind it!. Photo, ~ 1958.



Fig. 18. A photograph taken at 14 B Bank Road, Allahabad. *Left to right:* Ranjan, Meenu, Amma (Dada's mother; in her lap is Rita), Manju and Deepak. Photo, ~ 1959.

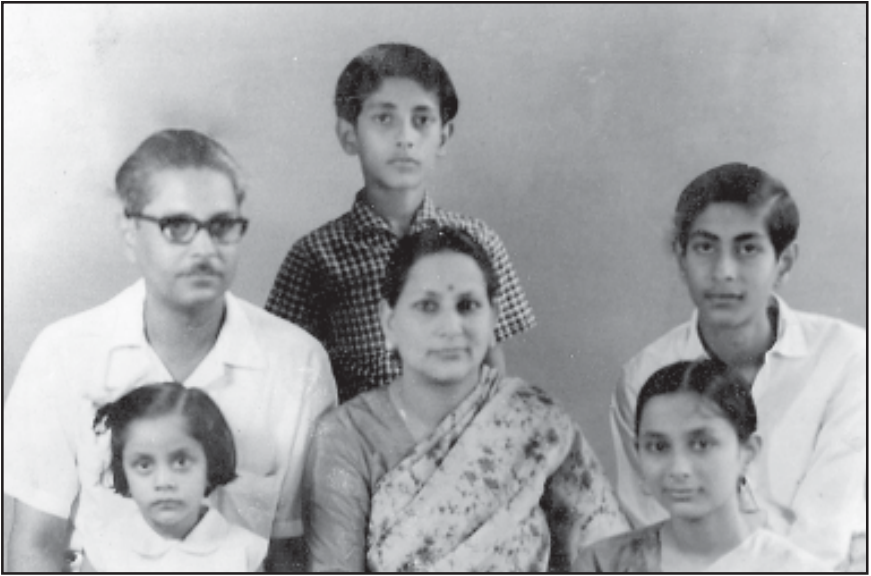


Fig. 19. The Krishnaji's Family (also shown on front page of part-C). *Front row (left to right):* Chitra, Bhabhi (Bimla), and Meenu (Ira). *Back row (left to right):* Dada (Krishnaji), Ranjan and Deepak. Photo, 1965



Fig. 20. *Left to right:* Deepak and Ranjan in a playful mood.

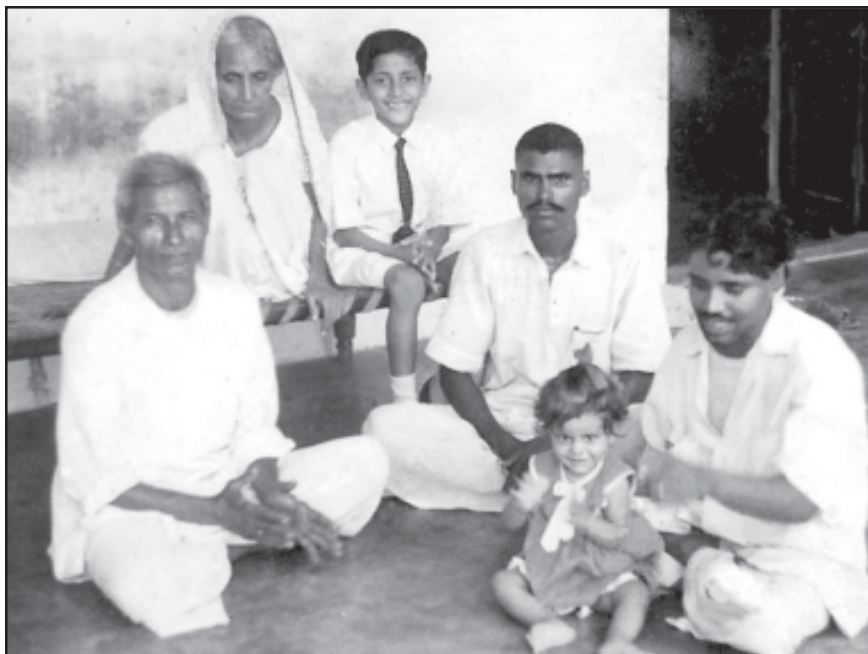


Fig. 21. *Left to right* : Ram Autar, Amma (Dada's mother), Ranjan, Bindeshwari, Chitra and Sant Lal. [Ram Autar and Bindeshwari were employees of the Physics Department, University of Allahabad, who often visited Amma. Sant Lal was employed by Dada to do house chores. All were considered as family members.] 14 B Bank Road, Allahabad. Photo, 1961.



Fig. 22. *Left to right*: Meenu, Dada, Deepak, Bhabhi (Bimla) and Ranjan; Chitra is in front of Bhabhi. Photo, 1968.



Fig. 23. *Back row, staggered, left to right:* Poonam, Madhu, Pinki, Chitra, Tanima (in white dress), Tripti (in red dress), and Garima. *Front row, staggered, left to right:* Satyendra, Shruti (yellow dress), Bhabhi (Bimla), Dada, Sanket, and Deepak. Photo taken at Ranjan's home in Govindpur, Allahabad; Ranjan's photo is on the wall on the top left. Photo, 1996.



Fig. 24. *Left to right:* Neera, Meenu, Sunil, Suresh, Bhabhi, and Dada. In the front are Ninni, Pinki and Monu. Photo, 1985.



Fig. 25. *Standing (left to right):* Deepak, Ila, Gopalji, and Dada. *Sitting:* Madhu, Bhabhi (Bimla, with Monu in her lap), Nirmala and Ranjan. Photo, December, 1979.



Fig. 26. *Standing (left to right):* Suresh, Monu, Deepak, Sunil, Dada, Bimla (Bhabhi in green sari), Meenu's mother-in-law (Prem Saxena, in blue sari); Meenu's father-in-law (Krishna Bihari, in white kurta), and Ranjan (with beard). *In front of Sunil is Sanket; in front of Dada is Pinki (in yellow dress); and in front of Bhabhi is Tanima. Front row (left to right):* Madhu (in yellow sari), Poonam (in green sari), and Meenu (in blue sari). Photo, 1992.



Fig. 27. A group photograph at 14 B Bank Road, Allahabad. Starting in the *front row (clockwise):* Bhabhi (Bimla), Deepak, unidentified, Rita, Ranjan (who has one of his hands on the “takht”, the wooden bed); Savitri Saran (aunt of Bimla Bhabhi), Usha (daughter of Savitri Saran), Chitra and unidentified. In the *front row (right)* is Rajni with her kids Anita and Sanjay. Photo, 1968.



Fig. 28. *Left to right* : Govindjee, Krishnaji and Goaplji. In the foreground is Ninni. Photo, 1983.



Fig. 29. A photograph of Dada and Bhabhi (Bimla) at Lucknow. Photo, 1987.



Fig. 30. Amma (Dada's mother). Photo, 1961.



Fig. 31. *Left to right:* Ranjan and Deepak. Photo taken at Lucknow. Photo, 1987.



Fig. 32. *Left to right:* Meenu and Bhabhi (Bimla). Photo taken in front of the Verandah at 14 B Bank Road, Allahabad.

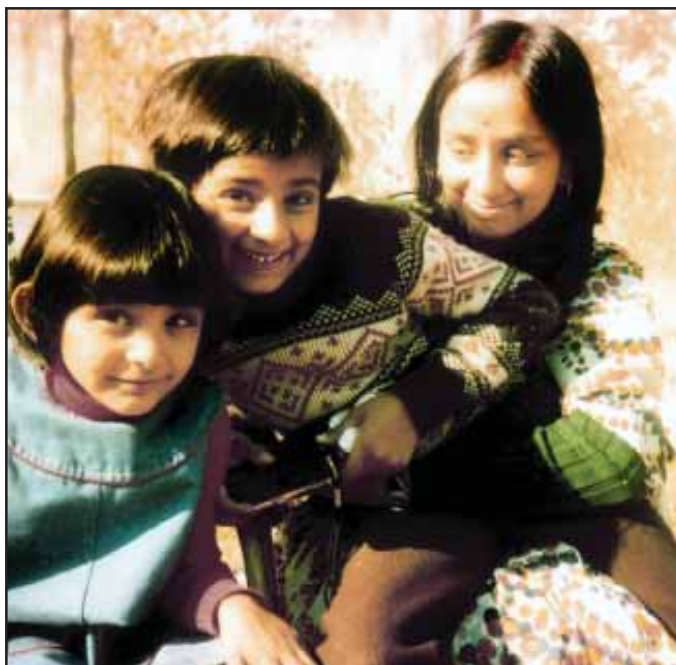


Fig. 33. *Left to right:* Neera, Sunil and Meenu. Photo, 1979.



Fig. 34. *Left to right:* Meenu and Suresh Chandra in their dining room in Sarita Vihar, New Delhi. Photo, 2006.

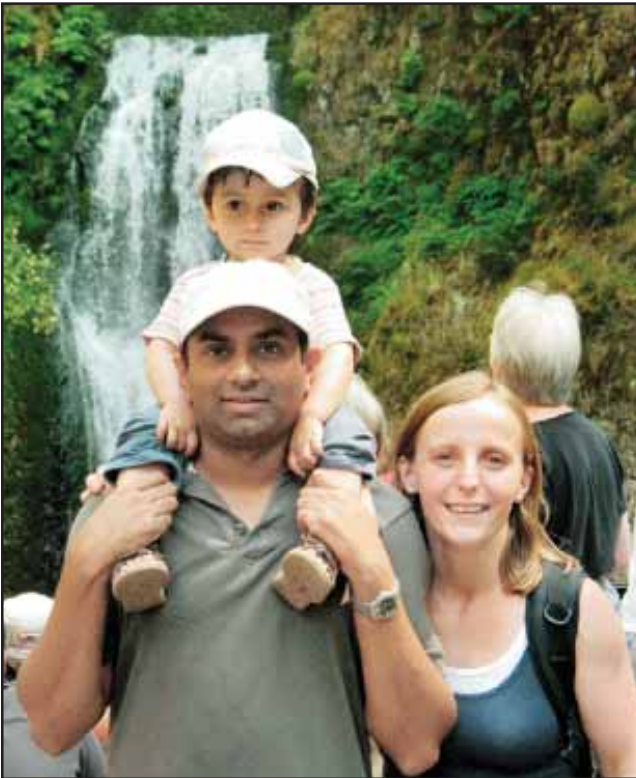


Fig. 35. *Left to right:* Sunil (holding Rowan) and Elfi. Portland, Oregon. Photo, 2009.

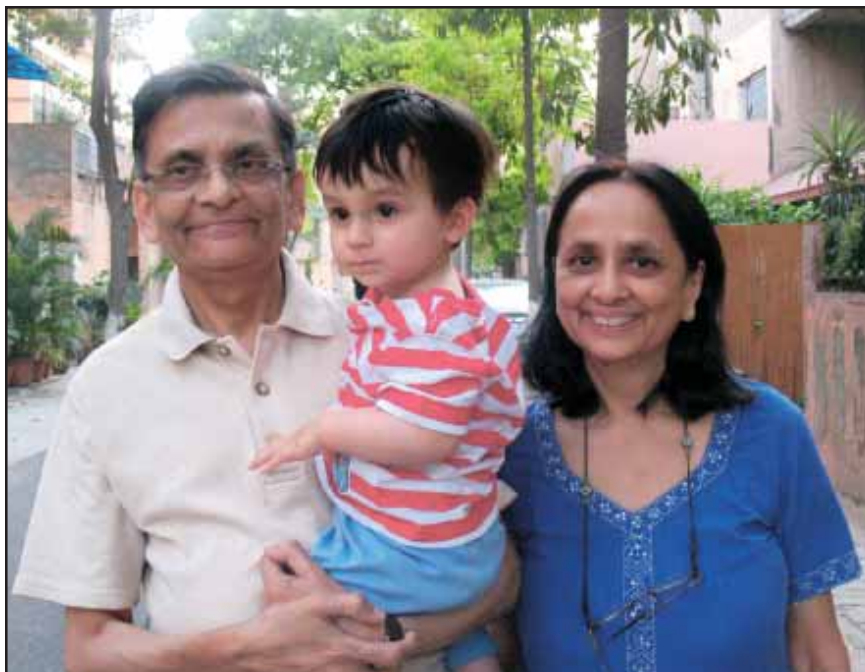


Fig. 36. *Left to right:* Suresh (holding Rowan) and Meenu. On the road in front of their home in Sarita Vihar. Photo, April, 2009.



Fig. 37. *Left to right:* Suresh, Meenu, Elfi and Sunil. Jurong Park in Singapore.



Fig. 38. A portrait of Deepak. Maharishinagar, Noida. Photo, 1980.



Fig. 39. Deepak's family. *Left to right:* Monu, Madhu, Pinki and Deepak. Photo, 1996.



Fig. 40. Deepak's family with Dada and Bhabhi. *Left to right:* Dada, Pinki, Deepak, Madhu, Monu and Bhabhi (Bimla). Photo, 1992.



Fig. 41. Children on the swing at Allahabad. *Standing (left to right):* Monu and Pinki. *Sitting:* Garima and Tanima. Photo, 1986.



Fig. 42. *A Left to right: Dada, Bhabhi, Deepak and Monu. Photo, Jan. 1997.*



Fig. 43. *Bhabhi (Bimla) with Madhu. M-40 Govindpur, Allahabad. Photo, Jan. 1997.*



Fig. 44. *Left to right:* Dada, Bhabhi (Bimla), Rajni and Pinki at Allahabad. Photo, Jan. 1997

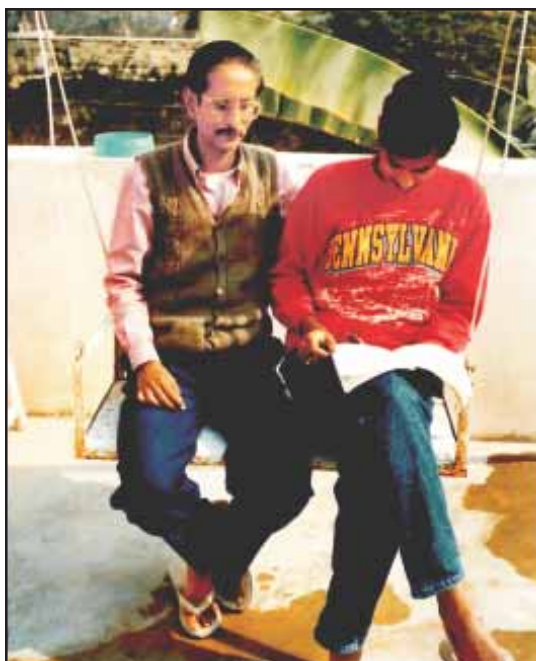


Fig. 45. *Left to right:* Deepak and Monu. Govindpur, Allahabad. Photo, Jan. 1997.



Fig. 46. Ranjan's family with Dada and Bhabhi. *Left to right:* Bhabhi, Poonam, Tanima, Ranjan (holding Sanket) and Dada. Maharishinagar, Noida. Photo, 1989.



Fig. 47. *Left to right:* Sanket, Ranjan, and Tanima. Home of Ranjan, in Lucknow. Photo, 1991.



Fig. 48. Ranjan's family. *Left to right:* Ranjan, Sanket, and Poonam. Tanima is in the front. Azad Apartments, New Delhi. Photo, 1989.



Fig. 49. Dada and Sanket. Home of Ranjan, Lucknow. Photo, 1992.



Fig. 50. *Left to right:* Tanima, Poonam, Sanket, Monu, Bhabhi and Dada. Home of Deepak, Allahabad. Photo, 1996.



Fig. 51. Bhabhi and Poonam knitting. Home of Gopalji, Gurgaon. Photo, 2002.



Fig. 52. Chitra's family. *Left to right:* Chitra, Tripti, Shruti, Garima and Harbinder Barring. Sitting: Satyendra. Photo, 2009.

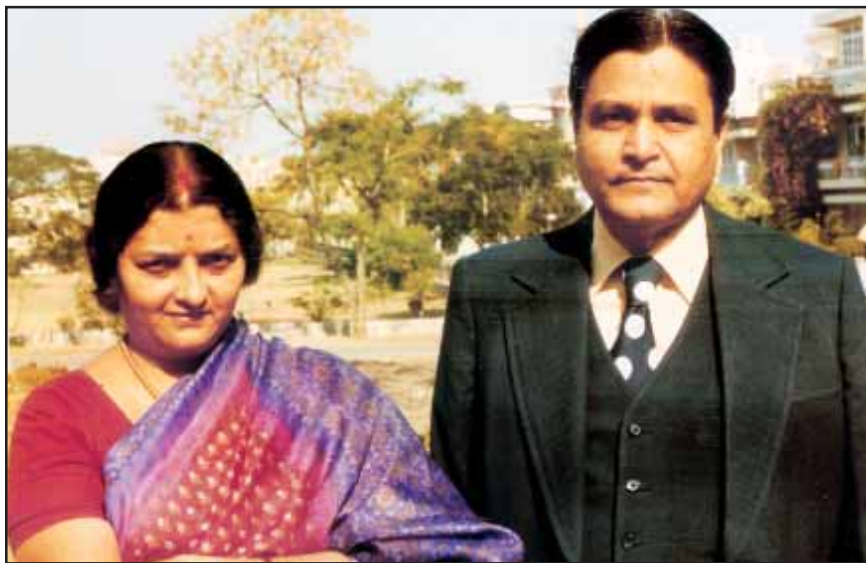


Fig. 53. *Left to right:* Nirmala and Gopalji. Hauz Khas, New Delhi. Photo, 1982.



Fig. 54. *Left to right:* Isha, Ila, Govindjee, Nirmala, Gopalji and Rajni. Photo, 2003.

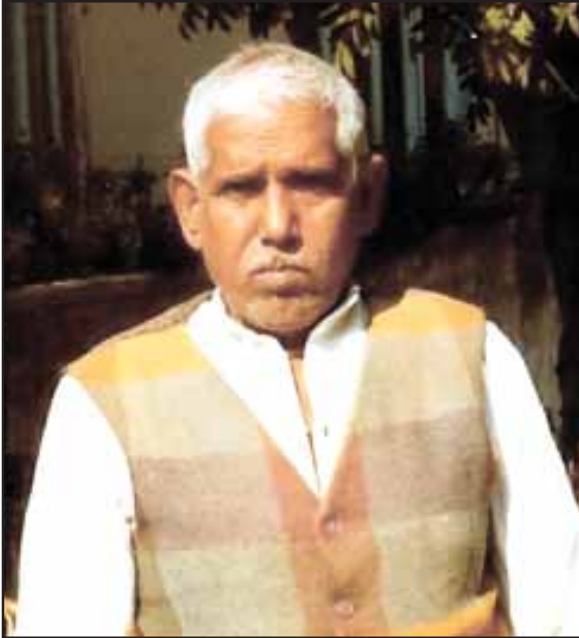


Fig. 55. Ram Kishan. See text by Gopalji in Part B of this book. 14B Bank Road, Allahabad. Photo, 1957.

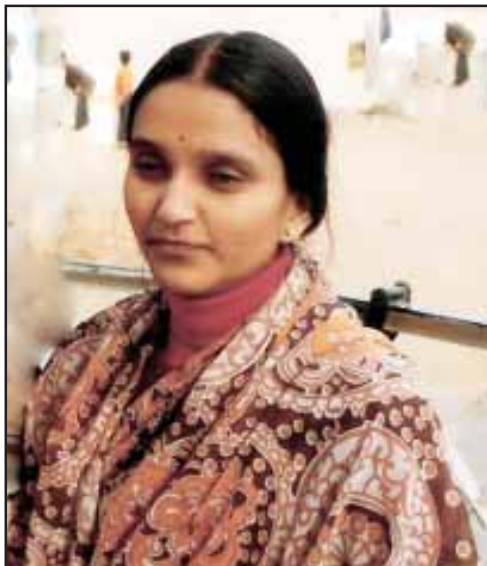


Fig. 56. A portrait of Manju. Photo, 1979.

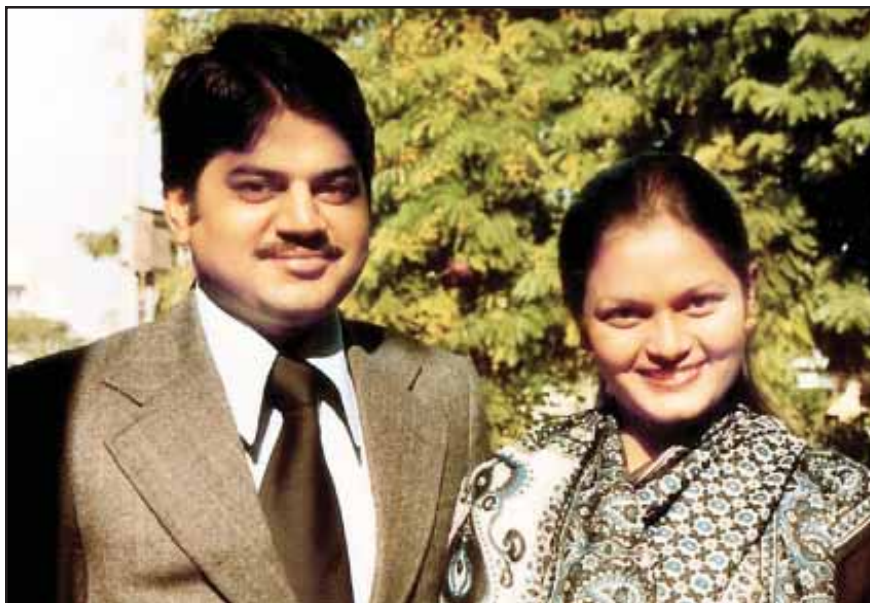


Fig. 57. Left to right: Shekhar and Rita. Hauz Khas, New Delhi. Photo, 1979.



Fig. 58. *Left to right:* Shekhar and Rita. Gurgaon, Haryana. Photo, February 2006.



Fig. 59. *Left to right:* Rita (tired after shopping) and Ila. Jaipur. Photo, 2008.



Fig. 60. *Left to right:* Shekhar, Ninni (Nandini), Rita and Nitin. Dubai. Photo, December 2008.



Fig. 61. *Left to right:* Ninni, Rita and Shekhar. Isha (Ila's daughter) is in front. Silver wedding anniversary of Rita and Shekhar. Gurgaon, Haryana. Photo, January 21, 2004.



Fig. 62. *Left to right:* Gopalji, Rita, Shekhar, Ila and Avinash. Silver wedding anniversary of Rita and Shekhar. Gurgaon, Haryana. Photo, January 21, 2004.



Fig. 63. A photograph taken at the wedding of Ninni (Nandini) with Tanu. Standing (*left to right*): Deepak, Sunil, Meenu and Suresh. Sitting (*left to right*): Elfi, Tanu Shankar (the groom), Ninni (the bride) and Bimla (Bhabhi). Gurgaon, Haryana. Photo, February 15, 2006.

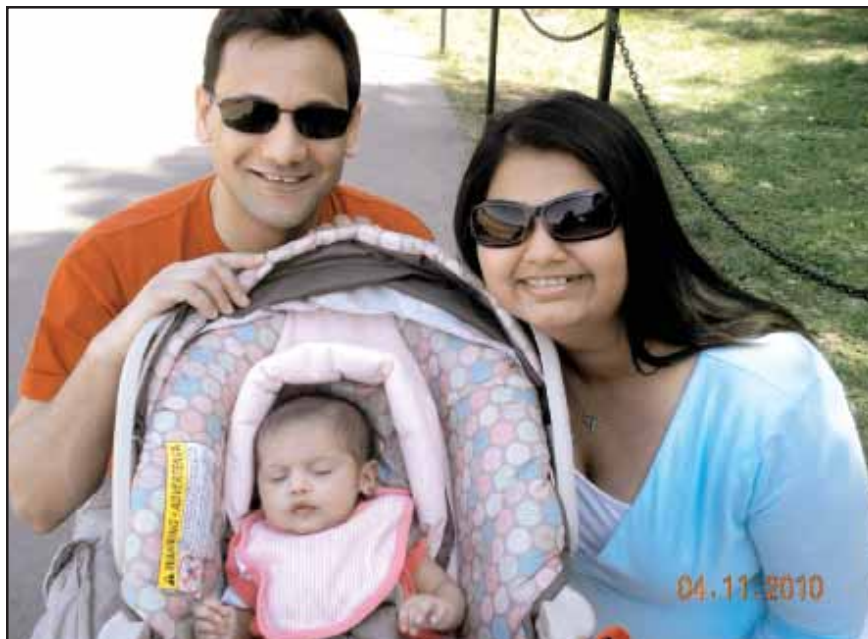


Fig. 64. *Left to right:* Tanu Shankar & Ninni with their daughter Aanika. Photo, April 2010.



Fig. 65. *Left to right:* Avinash and Ila (Isha is in front). Jaipur. Photo, 2008.



Fig. 66. Standing (*left to right*): Morten Christiansen, Anita, Ila and Avinash. Sitting (*left to right*): Rajni (Sunita is hugging her), Rita, Shekhar and Isha. Photo, 2003.



Fig. 67. Malati's Family. *Left to right*: Anshu, Malati, Anat (standing), Radha Krishna Sahay (RKS) and Anju. Berlin. Photo, 1974.



Fig. 68. *Left to right:* Anat with Neha in his lap, Anshu, Anju and Ashok. New Delhi. Photo, 1984.

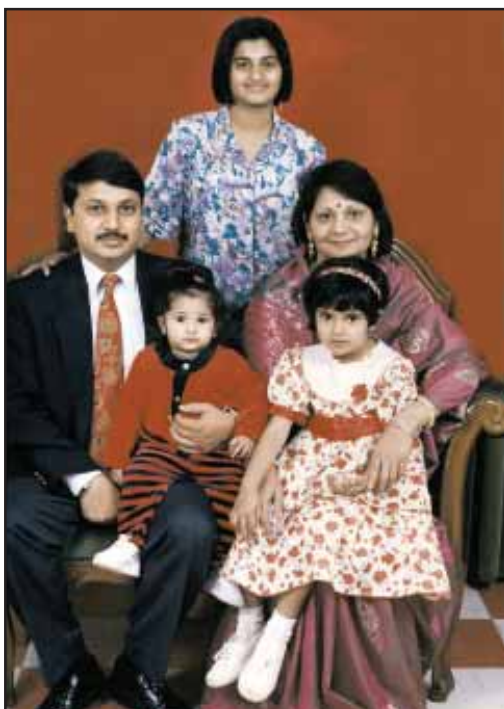


Fig. 69. *Anju's family. Left to right:* Ashok (with Ambika in his lap), Neha (standing), and Anju (with Richa in her lap). Riyadh. Photo, 1992.



Fig. 70. Anju's family. *Left to right:* Ambika, Richa, Anju, Ashok Okhandiar and Neha. UK. Photo, 1996.



Fig. 71. Anshu in his school staff room at St. Joseph's School, Bhagalpur.



Fig. 72. After Neha's graduation ceremony. *Left to right:* Richa, Anju, Neha, Ashok and Ambika. Edinburgh, UK. Photo, 2003.

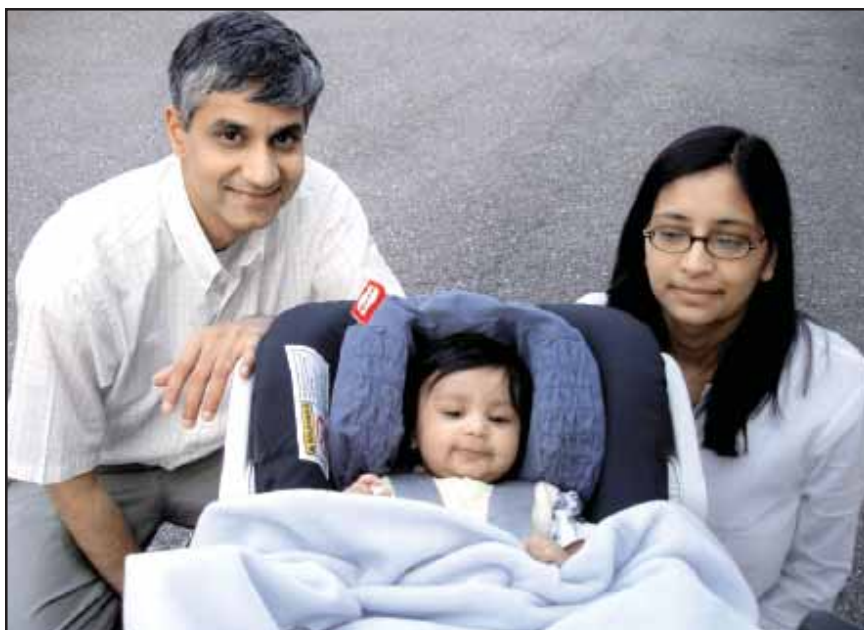


Fig. 73. Anat's family. *Left to right:* Anat, Anav and Shilpi, Cleveland, Ohio, USA. Photo, 2006.

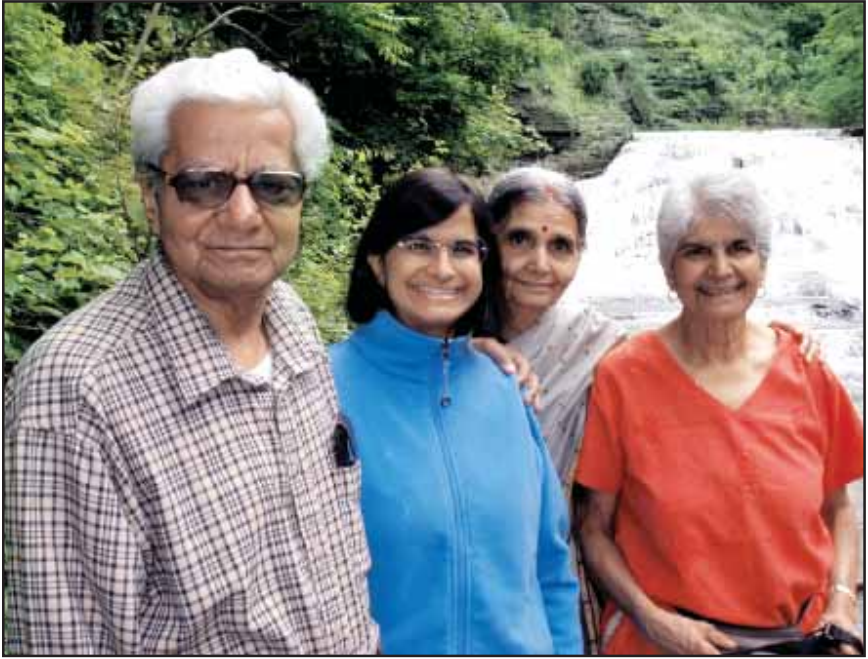


Fig. 74. *Left to right:* Radha Krishna Sahay, Anita, Malati and Rajni in Ithaca, New York, USA. Photo, 2006.



Fig. 75. *Left to right:* Govindjee, Anita, Morten, Radha Krishna Sahay and Malati. Anita's home, Ithaca, New York, USA. Photo, 2006.



Fig. 76. Dada with Anita (*right*) and Sanjay (*left*). Niagara Falls, USA. Photo, 1965.



Fig. 77. Rajni, Anita (*in front*) and Dada holding Sanjay. Niagara Falls, USA. Photo, 1965.



Fig. 78. Sanjay's wedding with Marilyn. *Left to right:* Bhabhi (Bimla) , Dada, Marilyn, Sanjay, Anita, Rajni and Govindjee. Stanford, California, USA. Photo, July 31, 1990.



Fig. 79. *Left to right:* Govindjee, Bhabhi (Bimla) and Dada. Golden Gate Bridge, San Francisco, California, USA. Photo, 1990.



Fig. 80. *Left to right:* Anita, Morten, Sunita and Bhabhi (Bimla). Home of Meenu and Suresh, Sarita Vihar, New Delhi, India. Photo, 2002.



Fig. 81. Govindjee's family. *Left to right:* Anita, Morten, Marilyn (holding Arjun), Govindjee, Rajni, Sunita and Sanjay (holding Rajiv). 2401 South Boudreau, Urbana, Illinois, USA. Photo, 2001.



Fig. 82. Golden wedding anniversary of Rajni and Govindjee. *Left to right:* Sanjay, Govindjee, Anita, Rajni, Morten and Marilyn. Home of Usha and Jain Swarup Jain, who gave a surprise party for this event, in Willow Springs, Illinois, USA. Photo, October 2007.



Fig. 83. Golden wedding anniversary of Rajni and Govindjee. *Left to right:* Rajiv, Arjun, Rajni and Sunita. Home of Usha and Jain Swarup Jain. Photo, October 2007.



Fig. 85. Govindjee (*left*) with Dada. Photo 1973.

Part D
And Much More



Selected List of Publications of Professor Krishnaji

[only the beginning pages of publications are listed]

Krishnaji (1950) Determination of elastic constants of solids by pulse method. *Proc. Nat. Inst. Sc. India* **16**, 227.

Krishnaji (1961) Development of scientific research in India – a casualty. *Science and Culture* **27**, 128.

With Prem Swarup

(1953a) Absorption of microwave gases. *J. Appl. Phys.* **24**, 1525.

(1953b) Diffraction of 3 cm waves by cylinders of the same diameters as the wave length. *J. Sc. Industr. Res. (India)* **12B**, 331.

(1954a) Temperature dependence of microwave absorption coefficient. *J. Chem. Phys.* **22**, 1456.

(1954b) Dielectric behavior of methyl bromide in 3-cm region. *J. Chem. Phys.* **22**, 568.

(1954c) The dielectric behaviour of acetaldehyde vapour at 9000 Mc/s. *Zeits. Phys.* **138**, 550.

(1954d) Radiation patterns of small pyramidal horn at 3.3 cm. *J. Sc. Industr. Res. (India)* **13A**, 125.

With Nand Lal Singh and D.V. Badami

(1955) Practical Physics, Students' Friends, Allahabad, India (a book for undergraduate students).

With Ganesh Prasad Srivastava

(1957a) Microwave absorption in ethyl chloride. *Phys. Rev.* **106**, 1186.

(1957b) Temperature variation of microwave absorption coefficient in ethyl chloride. *Proc. Phys. Soc. (UK)* **LXX**, 621.

(1958a) Millimeter wave dispersion in ethyl chloride. *Zeits. Phys.* **152**, 116.

(1958b) Microwave observation in methyl halides. *Phys. Rev.* **109**, 1560.

With Shankar Swarup

(1960) Microwave properties of metal-flake artificial dielectrics. *J. Inst. Telecom Engr.* **6**, 38 .

With Suresh Chandra

(1963a) Molecular interaction and linewidth of asymmetric molecule SO_2 . I. SO_2N_2 collisions. *J. Chem. Phys.* **38**, 232.

(1963b) Molecular interaction and linewidth of asymmetric molecule SO_2 . II. SO_2CO_2 collisions. *J. Chem. Phys.* **38**, 1019.

(1963c) Molecular interaction and linewidth of asymmetric molecule SO_2 . III. $\text{SO}_2\text{CH}_3\text{Br}$ and SO_2SO_2 collisions. *J. Chem. Phys.* **38**, 2690.

(1964) Quadrupole moment of OCS from self-broadening of microwave spectrum. *J. Chem. Phys.* **41**, 409 (also under Shyam Lal Srivastava).

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(1964a) Electron spin resonance absorption in recrystallized free radicals at low fields. *J. Chem. Phys.* **41**, 1027.

(1964b) Spin-lattice relaxation in free radicals. *Phys. Rev.* **135**, A1068.

With Abhai Mansingh

(1964a) Dielectric relaxation and viscosity of liquids. *Indian J. Pure Appl. Phys.* **2**, 176.

(1964b) Dielectric relaxation in Alkylcyanides. *J. Chem. Phys.* **41**, 827.

(1965a) Dielectric relaxation of nearly spherical molecules in pure liquids. *J. Chem. Phys.* **42**, 2503.

(1965b) On the dielectric relaxation in alkyl cyanides. *J. Chem. Phys.* **43**, 2573.

(1966) Solid rotator phase in polar liquids. *J. Chem. Phys.* **44**, 1590.

With Arjun Singh Rajput

(1970) Microwave spectrum of methylene bromide. *Phys. Lett.*, **A3**, 411 (also under Shyam Lal Srivastava).

With Shyam Lal Srivastava

(1964a) Quadrupole moment of OCS from self-broadening of microwave spectrum. *J. Chem. Phys.* **41**, 409 (also under Suresh Chandra).

(1964b) Quadrupole Moment of OCS. *J. Chem. Phys.* **41**, 2201.

(1964c) First-order London dispersion forces and microwave spectral linewidth. *J. Chem. Phys.* **41**, 2266.

(1965a) Molecular collision cross section due to quadrupole-induced dipole and dipole-induced quadrupole interactions. *J. Chem. Phys.* **42**, 1546.

(1965b) Effect of exchange forces on rotational lines broadened by rare gases. *J. Chem. Phys.* **43**, 1345.

(1967) Microwave spectral linewidth of OCS molecule due to molecular collisions. *J. Chem. Phys.* **47**, 1885.

(1970a) Microwave spectrum of methylene bromide. *Phys. Lett.* **A3**, 411 (also under A.S. Rajput).

(1970b) Dielectric relaxation studies in liquids at microwave frequencies and viscoelastic relaxation behavior of the solvents. *J.*

Chem. Phys. **52**, 940 (also under Dina Nath).

(1972) Study of molecular collisions by microwave spectral linewidths. *Chem. Phys. Lett.* **13**, 372 (also under P.C. Pandey).

(1973) *Bhautiki Prayog aur unke Siddhant* (Experiments in Physics and their Principles), Indian Press, Allahabad, India (a book for undergraduate students).

(1976) *Vidyut evam Chumbakatva ke Siddhant* (Fundamentals of Electromagnetism), Uttar Pradesh Hindi Granth Academy, Lucknow, India (a book for undergraduate students).

(1977) Barrier to internal rotation in N-methyl pyrazole from microwave spectrum. *Indian. J. Phys.* **51B**, 8 (also under N.K. Narain).

(1979) Barrier to internal rotation from the microwave spectrum – a review. *J. Sc. Industr. Research (India)* **38**, 112 (also under N.K. Narain and G.K. Johri).

With Vinod Prakash

(1966) Evaluation of molecular quadrupole moment. *Rev. Mod. Phys.* **38**, 690.

(1970a) Widths of rotational lines of an asymmetric-top molecule SO₂. I. Broadening by a rare gas. *J. Chem. Phys.* **52**, 2837.

(1970b) Widths of rotational lines of an asymmetric-top molecule SO₂. II. Broadening by a quadrupolar gas. *J. Chem. Phys.* **52**, 4674.

(1970c) Widths of rotational lines of an asymmetric-top molecule SO₂. III Broadening by dipolar gases. *J. Chem. Phys.* **53**, 1590.

(1978) Collision transfer of rotational energy and spectral lineshape. *Chem. Soc. Rev.* **7**, 219.

With Gopal Krishna Pandey

(1970) Microwave spectrum and dipole moment of nitroethane.

Indian J. Pure Appl. Phys. **8**, 261.

With Suresh Chandra (Agarwal)

(1968) Bond properties of molecules. *J. Sc. Industr. Research (India)* **27**, 135.

(1970) Microwave spectrum of chlorotrifluoroethylene. *Indian J. Pure Appl. Phys.* **8**, 634.

With Dina Nath

(1970) Dielectric relaxation studies in liquids at microwave frequencies and viscoelastic relaxation behavior of the solvents. *J. Chem. Phys.* **52**, 940 (also under Shyam Lal Srivastava).

With Vinod Kumar Agarwal

(1971a) Dielectric relaxation behaviour in liquid alkanethiols. *Indian J. Pure Appl. Phys.* **9**, 171 (also under Pradip Kumar).

(1971b) Dielectric relaxation behaviour of alkanethiols in benzene solution. *Indian J. Pure Appl. Phys.* **9**, 176 (also under Pradip Kumar).

(1971c) Dielectric relaxation mechanism in some alkanethiols. I. *J. Chem. Phys.* **54**, 4132 (also under Pradip Kumar).

(1972) Dielectric relaxation mechanism in some alkanethiols. II. *J. Chem. Phys.* **56**, 5034 (also under Pradip Kumar).

With Pradip Kumar

(1971a) Dielectric relaxation behaviour in liquid alkanethiols. *Indian J. Pure Appl. Phys.* **9**, 171 (also under Vinod Kumar Agarwal).

(1971b) Dielectric relaxation behaviour of alkanethiols in benzene solution. *Indian J. Pure Appl. Phys.* **9**, 176 (also under Vinod Kumar Agarwal).

(1971c) Dielectric relaxation mechanism in some alkanethiols. I. *J. Chem. Phys.* **54**, 4132 (also under Vinod Kumar Agarwal).

(1972) Dielectric relaxation mechanism in some alkanethiols. *II. J. Chem. Phys.* **56**, 5034 (also under Vinod Kumar Agarwal).

With Ramji Srivastava

(1975a) Dielectric permittivity and breakdown strength of molybdenum trioxide films. *Jour. Phys. Soc. Japan* **39**, 1316 (also under Parmendu Kant).

(1975b) Electrical properties of vacuum deposited films of tungsten trioxide. *thin solid films.* **26**, L13 (also under Parmendu Kant).

(1975c) Dielectric properties of vacuum evaporated films of tungsten trioxide. *thin solid films.* **30**, 319 (also under Parmendu Kant).

With Prem Chand Pandey

(1972) Study of molecular collisions by microwave spectral linewidths. *Chem. Phys. Lett.* **13**, 372 (also under Shyam Lal Srivastava).

With Rajendra Kumar Laloraya

(1973) Laser excited Raman spectrum of 1,1,1-trichloroethane. *Indian J. Pure Appl. Phys.* **11**, 74.

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Development of Scientific Research in India-A Casualty

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[In keeping with our policy to allow publication of different view points on educational policy and scientific progress in our country this article has been printed. The views expressed in it do not necessarily coincide with those of the Board, of Editors - Ed. SCI. & CULT.]

One cannot begin writing about scientific development in India without paying the highest tribute to the unique and imaginative personality of our popular Prime Minister Shri Jawaharlal Nehru. His enthusiasm for and his encouragement to scientific research in this country have been, if I may say so, many times more than that of the scientists themselves. It is not difficult to imagine how different the state of affairs would have been if the scientists or planners of scientific research in India had shown greater imagination and made better use of the encouragement given by the authorities who have been anxious to do their best.

Unhappy state of affairs

In the face of an apparently overwhelming evidence in the shape of a large number of National Laboratories, research institutes, new universities, Vigyan Mandirs and a number of development councils and committees, it is difficult to convince anybody in India that we have not progressed much in the field of scientific research. On the other hand, it is equally difficult to convince anybody outside India as well as a large number of young scientists in India that we have made any worth while progress in this sphere. It can be said that one

must 'learn to walk before running' and, this takes time and therefore one should not mind the effort and time if one is learning to walk properly. Unfortunately, however, many are doubtful even about the soundness of the principles on which our planning is based. One must discriminate clearly between the technological developments made possible through loans and aids (technical and financial) from other countries, and the development of scientific research which will lay the foundations of future industrial, technological and scientific developments made and sustained by our own people without external help. A practical measure of the success of planning in this direction, to my mind, should be the ratio of the volume of research and trained research personnel produced to the amount of money spent on it. It appears, however, that this ratio for India, at present, will be found among the lowest in the world. It is unfortunate that scientists as well give a false picture of the state of development and thus make people complacent and proud of something which does not exist. The institution of Indian Science Congress, as it is run at present, leaves much to be desired. It is growing up as a scientific counterpart of the annual gathering of social and political organizations.

Some of the paradoxes

It is not uncommon to find directors of laboratories or Vice-Chancellors of universities complaining that they are not finding suitably qualified scientists to fill up a number of vacancies (specially in physics and engineering) in their organization and at the same time one often comes across highly qualified young scientists not getting suitable jobs where they can do some useful work. We are told that India is a poor country and can not afford to spend sufficient money on research and yet it is not rare to find specialized laboratories for almost identical subjects being started by different departments of the Government. At times, two different sections of the same laboratory may be seen handling similar projects and even two officers of the same section handling similar projects separately. Big laboratories may be found stuffed with costly equipment purchased

from abroad but with practically nobody to use them and at the same time competent and qualified men sitting in rooms with inadequate equipment to do some useful work. Younger scientists are told that they should not go abroad and stay in foreign countries for learning research because there are enough facilities available in India and the motherland needs their services badly. When these young men, however, are interviewed for employment, they are invariably asked- 'Have you worked in a foreign country?' or 'How long have you been in the States?' The young men to their surprise find that their services are really not needed unless they can overawe the experts by the foreign acquired mannerism and confuse them with names of powerful tools of experimental and theoretical research. Such is the paradox in which we find ourselves to day.

Heavy work for the top scientists

The number of top ranking scientists, in the country, are few but the number of assignments needing their services as experts are far too many with the result that one man has to attend to far too many appointments and responsibilities. The selected few, who proudly possess science in India, are required to attend all sorts of conferences in other countries and may be in connexion with subjects they may not be interested in. The load of work goes on increasing since they cannot (or do not want to) find their understudies to relieve them partly of their responsibilities. They probably derive moral support from the fact that even Nehru has not been able to find his substitute. It appears that some of them may not like to help create their successors. The administrative responsibilities at times make their professional work as of secondary importance. It is not understood why they do not realize that when we neglect our profession we also become unfit as competent technical advisers.

Universities: best place for research

Everybody will agree that universities are the best place for research activities. The climate of research and original thinking can never develop in a Government establishment whether it is under

SRCA Ministry, Defence Ministry, Communication Ministry or Home Ministry. The reasons are very obvious and simple. The future of the worker in a Government laboratory depends upon the progress report and the confidential report submitted by his officer and this fear is enough to kill initiative and independent thinking. This may not be true in all cases, but I do feel that this is the case with the majority of workers in the Government establishments. Very senior officers like Assistant Directors or Principal Scientific Officers have been heard to say that if a particular idea is not liked by the chief it should not be discussed. The creative research cannot develop except in a free and unfettered atmosphere; freedom and criticism both are shy of 'officers' and the Government organizations can not work without officers. Apart from the greater degree of independence of thought, action, and expression in the universities, one is likely to get a team of enthusiastic and willing workers more easily there than in Government establishments. The possibility of getting a research degree, of publishing the results quickly in a research journal and thus getting due credit for the work done, and the possibility of commanding spontaneous respect and reputation among a large number of students are some of the very powerful incentives for research in the universities. These factors are lacking in Government organizations. Instances are not infrequent of individuals who produced very good work when they were in the universities but almost stopped producing any work even in a decade or so after joining a Government establishment. Some of the research workers in Government organizations seem to translate the 'Parkinson's law or the pursuit of progress' in practice. People sometimes begin to doubt whether it is really true that universities are the best places for research activities in India because they argue that in such a case people like Bhaba, Krishnan and Mahalanobis etc. should have been in the universities. It is, really, the biggest misfortune of this country that our top scientists are heading Government establishments and not university research centres. A situation, in which scientists prefer to remain directors instead of professors, has to be taken note of, rather, seriously. If this is the result of our planning, I must confess we have planned not for

progress but for neglect of the progress of scientific research in our country. It will be difficult to find a parallel in any of the advanced democratic countries in the world.

Unfair treatment to universities

One may be pardoned if he is inclined to believe that the absence (total or partial) of the few topmost scientists from the universities is responsible for the step-motherly treatment given to them as compared to CSIR laboratories, Defence Science Units and Indian Institutes of Technology. A senior scientific officer Grade I in any one of the Government establishments and an Assistant Professor in any Indian Institute of Technology enjoys almost the same emoluments as that of a University Professor. An assistant director of CSIR laboratory, a principal scientific officer in Defence Science Service or a professor of Indian Institute of Technology draws a higher salary than that of a University Professor. I do not know how the top scientists, particularly those who have something to do with universities as well, tolerate or acquiesce in such a state of affairs. It is a fact that except for the universities of Delhi and Calcutta, other universities have only one professor in each department, whereas National Physical Laboratory alone has about eight Assistant Directors and twelve Senior Scientific Officers of Grade 1. Does it mean that the controllers of scientific research in India do not want research to be done in the universities or do they think that a research worker in the universities has any less material need than in a Government research laboratory? It is true that a number of university teachers remain content with lower salaries because they realize that freedom of thought and action involve sacrifice. Even they get disgusted when they find that politicians in power and officials even, indulge in unfair criticisms when they have produced more research for the money spent on them and have in addition trained research personnel for the country. A university man feels discouraged to find that his counterpart is looked after in a better way for poorer performance. The result of this apathy towards university research worker is that competent and qualified young men, who can not stand these disabilities, are leaving the

universities for better jobs elsewhere, and are normally lost in the field of administration.

University authorities may not often encourage research

All is not well in the universities also. The torch bearers of academic standards themselves do many things which discourage research. Original thinking and translating it into action requires a certain amount of time in which one should not be hustled or disturbed. The age old syllabus and its teaching by the age old methods takes enormous amount of one's time without making the student any wiser. The equitable distribution of work load (teaching) does not permit anybody who is conducting research to transfer some of his teaching load to colleagues not interested in research. Well, you are paid for teaching and not for research! It is intriguing to observe that every work in the university other than research is paid for. For example, one is paid for teaching, for maintaining discipline as a proctor, for invigilating during examination, for examining answer papers, for working as a tabulator, for coaching hostel students or scheduled caste students, for officering the NCC cadets, for looking after the students as a hostel superintendent etc. If one happens to be interested in research activity, he has to subscribe to journals, pay for the price of reprints out of his own pocket. Curiously enough the audit rules do not permit of expenses on correspondence connected with research. Besides, the library cannot subscribe to all journals.

I have failed to understand how anybody who is not actively engaged in research can possibly teach and guide effectively post graduate students; but this is what takes place on a very large scale in most of the university departments. In most of the university science faculty departments there is a restriction on the number of research scholars one can supervise either by convention or by rules. It is an established fact today that scientific research worth the name is not possible by restricting oneself to narrow classifications of subjects like physics, mathematics, chemistry, zoology or botany etc. The various subjects overlap so much that a physicist may specialize in something which is in the domain of the chemists or the biologists. A

mathematician may enter the field of the physicists or linguistics and so on. The universities do not easily permit a member of the physics department to carry on his research work in the zoology department or a member of the mathematics department to do so in the physics department on the hardly justifiable plea that it creates a lot of complications if such relaxations are made. A top scientist who has control over the universities, as well as Government department, told in my presence a young friend who is a member of the mathematics department and has taken his PhD in theoretical physics, that it will be difficult for him to get a job in the physics department of a university because his basic degree is in mathematics. The young theoretical physicist was evidently disappointed. I do not mean that this is always done. I have mentioned this incident to show that our top scientific persons hold such opinions and naturally control things in the same manner. A very serious matter which requires attention is the way in which active research workers have to move from one place to another. A certain assistant professor works hard and does creditable research, say, in University-X and receives a sizable grant worth several lakhs of rupees for purchasing equipment; he builds up an excellent laboratory after spending some years of his active life and several lakhs of rupees. Soon after this, he is appointed as a professor in the University-Y, where he has to start all over again and spend some more years of his active life and more money. The laboratory-X in the meanwhile lies useless in most cases for all times to come. It may be interesting to note that the Y-University professorship fell vacant because the professor there was appointed at Z-University and he left his active laboratory which he had built according to the requirements of his subject, owing to differences in superannuation rules. It is not understood why a person who can be regarded fit as a professor in one university can not be allowed to stay on as professor in the other university where he had built a laboratory and was actively carrying on research. This is all the more puzzling when the experts who do the job of selecting professors are very few and happen to be common factors in both the universities. Further, it is the same Government which finances the two places in

question. Cases of the type quoted above are occurring so frequently that one feels surprised why nothing is done to stop this waste of time and money, both of which we need so badly. The research output as a result of all these anomalies is the natural casualty.

In some universities including the one to which I belong, a very curious situation exists as far as recognition of work and merit in terms of emoluments is concerned. If you go to some foreign country for conducting higher studies and advanced research and remain on leave without pay (in most cases) for some years, after your return you get a salary lesser than what you would have got if you did not go on leave and did not do creditable research. Some authorities argue that increasing qualifications by doing research is one's personal benefit and so why should the university pay for it. But in case you are not a university employee, you may be appointed with a higher starting salary because they think that the university will benefit by your qualifications and experience and therefore should pay for it.

The tyranny of red tape

When everything else is all right, it is the red tape which may often cause a disaster and make completely ineffective many of the good schemes launched after long deliberations. The red tape is held responsible for the sad death of Dr Joseph and probably of many others not generally known. The red tape is troublesome anywhere and more so in the field of scientific activity because research scientists are said to be allergic to it. I know the cases of a few brilliant and mature Indian scientists who have left India and are working in the United States because they were harassed by the red tape.

One of the typical examples of the all pervading red tape in action, is seen when you want to get some equipment from outside India. Before you can get the desired equipment you have to get three quotations, a proforma invoice, import license, 'no manufacture certificate', duty concession certificate and the necessary funds. All these items have to be procured from different agencies through proper channel and very often these are not easily available or else reach you after a very long time and in the meanwhile the price of the

equipment has changed and you have to proceed all over again as far as proforma invoice, allocation of funds and import licence are concerned. Purchase through UNESCO coupons does simplify the procedure but only as far as import licence is concerned. Sometimes the equipment reaches India from the foreign country in a reasonably short time, say, two months but invariably it takes anywhere between four to eight months before it can be cleared through customs and reach you. In a large number of cases, the problem you had in mind when the equipment was ordered, has been already solved in some other country. I am sure things can be simplified with a little thoughtful effort in this direction. I do not need to elaborate on this point because this is known to everybody but they are unable to get over the difficulty. The red tape has converted every able Indian scientist into an administrator.

Anybody who tries to raise his voice against the conventional methods is immediately overawed by the mention of a galaxy of renowned Indian scientists such as Ramanujam, Ray, Saha, Raman, Bhabha, Bose, Krishnan, Kothari etc. who, they say, are products of these very methods of education, research and administration. The wise men have, however, said ‘genius is not a product of any system but is produced in spite of the system!’ The success of a system is not to be judged by the five per cent extra brilliant people whose brilliance could not have been reduced by anything or by the another five per cent whose dullness could not have been brightened by the best system, but by the bulk of ninety percent people who are susceptible to the climate all around them and are capable of being moulded.

What are we to do

It is my conviction that universities are the best places where high quality research can be produced in shorter time and at much lesser cost than any other establishment. I do not mean that research establishments run by CSIR, Defence Science, and other Ministries, are not necessary. Those establishments have to be there but they should normally take up applied research and undertake certain specialized types of work.

Uniformity of employment

The research output (quality and quantity both) from the universities in the present context of things, will never increase as long as such a large disparity in emoluments exist and as long as facilities are provided for earning extra money by doing all kinds of extra unacademic work. The only solution of the problem is to raise the emoluments of the university teachers to a decent level which is comparable to those of other research establishments so that they do not need to run after extra work for augmenting their income. When this has been done, all the extra payments can be stopped and the extra work distributed equitably as part of normal duties. A department may have on the permanent staff 30% of the total strength as professors and 50% as assistant professors and 20% as fellows. The scales of salaries may be: professors-Rs. 1000-1800, assistant professors Rs. 400-1100 and fellows-Rs. 250-450. The fellows will normally be required to run practical classes only and devote half the time to research. The research fellowships financed by CSIR and UGC will continue to be there.

Radical change in syllabus, teaching and examination methods

Increase in emoluments alone will not work as a magic wand and produce good research and competent research personnel unless drastic changes are made in syllabus, teaching methods and the examination system.

If one looks into the problem a little more closely it will be clear that at present it is the examination system which dictates the syllabus, which in turn controls the teaching methods. In the scheme of things, the examination thus controls our education and becomes most important when it really should be the least important item. The system of external examiners compels every body to finish the course in such a manner that the students might be able to answer the stock questions. As a natural corollary to this, memory is at a premium and intelligence is at discount. The method is designed to iron out independence of mind, originality, and native curiosity, and to turn intelligent young men and women into automatic machines. An

examination is a very necessary thing, and when properly devised it measures the intellectual development of the student as a result of the educational experience he has undergone. Our present examinations are very unreliable and inaccurate from this point of view. Nor are they efficient ways of producing graduates, which is evident from the fantastic failure rates, at the various examinations. Once we are able to shake off the control of examination on us, it will be possible to achieve the correct objective of lecturing to a class. The present teaching method upholds the definition of Education given by some one as 'Education is that mysterious process whereby information passes from the lecture notes of the professor through the fountain pen on to the note book of the student, without passing through the minds of either'. The main object of a lecture should be to stimulate the student's mind, to get him to think, to suggest new ways of looking at subjects to open a window so that the student sees his subject in a wider perspective. The primary appeal of the lecturer must be to the students mind not to his memory. They have to be taught the art of studying, of reading, of using a library, of digging out information by their own efforts. We should hold discussions, seminars, let the students write essays and read papers, require them to solve original problems which are not in the book. Education rightly understood is not to 'put in' but to 'draw out'. It is in this way that education becomes a training, a discipline in tackling problems with intelligence, resourcefulness, and creative freshness. It should be clear that education comes through doing, not through listening. The above objectives can be realized only if the system of external examiners is given up. The person who teaches a certain branch of subject should be responsible for examining the students in that branch and grading them. This will automatically put a stop to hankering after a number of examinerships for earning more money. I have devoted a little time to this problem because a proper solution to this will enable us to produce intelligent personnel who would be suited very much better for quality research as well as any work in life. We can then raise the standard of our research degrees as well by introducing more stringent conditions with regard to knowledge,

understanding and originality.

Under the present circumstances of our slender resources, financial and otherwise, it is very necessary that duplication of effort has to be avoided as far as possible. This is necessary only till the time our resources become adequate. This work can be done admirably by most of the Government agencies.

Instruments industry should be given high priority

Instruments of some kind or the other are needed by all kinds of research including theoretical physics and mathematics (they need calculators and computers). One can easily see that it is futile to depend on the instruments imported from other countries because they cannot serve our purpose for all times. It takes very long to get them and usually they are obsolete by the time they are here. In some cases they do not stand the rigours of our climatic conditions. They can not be maintained in operating conditions after a few years because spares are not available. Well, the most important point is that you always work with a comparatively obsolete type of instrument. The import of costly, complicated and automatic machinery lands us into another amusing situation; we have to choose problems to the convenience of these machines and only routine problems will submit to such a treatment! One of the Government organizations which is supposed to carry out high priority top secret work for the country has been solving the problem till lately in a very simple way. They decided not to import any new equipment but to carry on their research with the surplus war disposal instruments most of which turned out to be unserviceable.

Our industrialists normally will not undertake a venture of making instruments which may be used in very small numbers; the only place where instruments can be used in large numbers is the industries themselves, and this forms a vicious circle. This is another direction where the Government agencies could and should have come to our help. I think a very large part of the National Physical Laboratory, the Central Electronic Engineering Research Institute should have engaged themselves in designing and making on small

scale, high quality instruments needed for research. I mention NPL and CEERI only, because most of the instruments used today are either optical or electronic.

We must therefore stop depending on imported instruments and start developing our instruments in right earnest. We must create an awareness in the industries regarding the benefits of using and making instruments; in the meanwhile the Government organizations should take up the work seriously.

One sometimes really wonders how small countries like Japan and Western Germany which were completely devastated during the last war and whose brilliant men were taken away to either USA or Soviet Union, have within a short interval risen up in the field of research so well. (In technology they are competing with USA and USSR in many fields). The theoretical Physics School of Japan led by Yukawa and the group at Gottingen, Germany, to mention a few examples, enjoy the highest international reputation. The fact that Indians do not lack intelligence or stamina for sustained work, has been proven beyond doubt. One only fails to understand why Chandrasekher, Harish Chandra, Salam, Bose, Sidhu, Gupta and Khurana to mention just a few names are not leading active schools of research in India. I do not think it is the American or English money only, which is keeping them there. Even if it was so, it would have been better for us, to pay them well and let them create schools of active research in India which may breed not only high quality research but properly trained research personnel, rather than spend crores of rupees in building a large number of palatial buildings where half the money goes into the pockets of clever contractors and their supervisors.

I have not expressed these thoughts, from the narrow nationalistic viewpoint but have done so in true international sense. It is obvious that if the world has to progress, every part of the world must progress equally. Any part of the body, however small and insignificant, can not be left in a diseased state, otherwise the body will look deformed though it may be developed otherwise. I have tried to make an honest

diagnosis of the internal diseases which are eating into the vitals of scientific research in India. I hope people will realize that the multipurpose food in the shape of crores of rupees cannot be digested by the diseased body of scientific research development unless steps are taken to cure the diseases.

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Retirement Celebration of Professor Krishnaji on January 12, 1982

After an illustrious academic career, Professor Krishnaji retired (superannuated) from the University of Allahabad (Allahabad, UP, India) on January 12, 1982, just when he had turned 60. He had served the University as a Professor and Head of the Physics Department, as Dean of the Faculty of Science and the Pro-Vice Chancellor of the University of Allahabad.

Students, teachers and staff of the Physics Department had organized a function in the Library Hall of the Department to make this day a memorable one for all his admirers. Professor Udit Narain Singh, the then Vice-Chancellor of the University chaired the function. Many senior teachers of the Faculty of Science such as its Dean (Professor Harish Chandra Khare), Head of the Physics Department (Professor Vachaspati) and Head of the Zoology Department (Professor Uma Shankar Srivastava) participated in the program. On invitations of the organizers (Pradip Kumar and Vinod Prakash) many students of Professor Krishnaji came from all over India for the occasion : Ramji Srivastava from Sardar Patel University, Vallabh Vidyanagar, Gujarat, Nabin Kumar Narain from the National Institute of Technology, Jamshedpur, Bihar (now in Jharkhand); Suresh Chandra from Banaras Hindu University, Varanasi, UP; Dina Nath from Feroz Gandhi Post Graduate College, Rae Bareli, UP; and Gajendra Kumar Johri from DAV College, Kanpur, UP. The Library Hall was so full that many teachers and staff members could not even get a place to stand. The organizers then realized that this function should have been held in a bigger Hall such as the Vizainagram Hall, but it was too late.

Vice-Chancellor Professor Udit Narain Singh honoured Professor Krishnaji by garlanding him and offering him a shawl on behalf of the University; later many teachers, students and the staff members offered garlands and recalled their associations with Professor Krishnaji, a great human being, helping each and every one when it

was most needed.

Many speakers recalled Krishnaji's teaching methodology hypnotizing the audience, and spreading an aura of awe and reverence (see Arvind Mohan, Chapter 4, Part A of this book); others praised him for his institution building abilities; they gave examples of the Microwave Research Lab of the Physics Department, and of the J.K. Institute of Applied Physics and Technology. His love to promote the science in Hindi as President of Vigyan Parishad, and his contributions to the National Academy of Sciences, India in various capacities making it a vibrant scientific society were also praised. A *citation* was prepared by the organizers with the help of Professor Manas Mukul Das of the English Department of the University; it was read by Dr. Chandra Mohan Bhandari, a teacher of the Physics Department, and a former student of Professor Krishnaji. It is reproduced below.

Citation **Professor Krishnaji**

On the eve of your retirement from the University of Allahabad, we offer our homage and felicitations to you. As a great teacher, you bestowed on us your deep affection and love, revealed to us the intricacies of Physics, and through the example of your selfless dedication, imparted to us a love for learning and for the disciplined toil it involves. What we are today, we are because of you. You taught us not merely a subject, but a way of life.

The glorious traditions of this department nurtured by Professors Megh Nad Saha, K.S. Krishnan, S.R. Bhargava and Kedareshwar Banerjee were preserved and furthered by you from August 9, 1945 through January 12, 1982. The vision and ideal of national development, that inspired the work of Professor Saha, was carried forward and bequeathed to us by you. Proceeding on his footsteps you developed indigenous instruments with Indian know-how and with your able guidance in the field of microwaves and of molecular interactions, led numerous research scholars in pioneering work. In the true spirit of the motto – '*Quot Rami Tot Arbores*' – of your Alma Mater, your inspiration enabled your students to develop an institution of their own.

In recognition of your contribution to the cause of science teaching and outstanding experimental research, the University Grants Commission, New Delhi, honoured you by a National Fellowship and by the Sir C.V. Raman Award (1976) of Hari Om Trust.

Of late, through sustained and untiring efforts, you have injected new life into the National Academy of Sciences, India, established in 1930 by such eminent scientists as Professors Megh Nad Saha and Neel Ratan Dhar.

As we pay our homage to you, we seek your *Ashirvad*. May we be able to protect the traditions of which you were a custodian? May we be able to dedicate ourselves to the task that was so dear to you? We pray, may you long be with us and guide us in making the department of Physics, University of Allahabad a still more glorious home of learning.

January 12, 1982

Students and Members

(Department of Physics)

(University of Allahabad).

Professor Krishnaji thanked all those present on the occasion for organizing the function, blessed them and bade good bye promising to keep serving his *Alma Mater* the way he can even in the future.

His graduate students, those present in Allahabad and also those who came from all over India, met Professor Krishnaji on his 60th birthday on the 13th January 1982 in an informal get-together and a photograph on that occasion is shown in Part C of this book (Figure 5, p. 164).

Seventieth Birthday Celebration of Professor Krishnaji: 1992

The Advisory Committee of the Seventh National Seminar on Ferroelectrics & Dielectrics (VII-NSFD) decided to honor Professor Krishnaji (born 1922), the Doyen of Research on Dielectrics in India, on his 70th birthday for his pioneering contributions in the field of Dielectrics.

This seminar was held at Hemwati Nandan Bahuguna University, Srinagar, Garhwal, Uttarakhand, on October 3-5, 1992. The number of participants at Garhwal from outside the host University was more than 100. Amongst his students, Suresh Chandra from the Banaras Hindu University (BHU), Varanasi, UP; Abhai Mansingh of the Delhi University; Ashoka Chandra from the Department of Electronics, Government of India; Shyam Lal Srivastava from the University of Allahabad, UP; and Janardan Singh from the National Physical Laboratory, New Delhi were present on the occasion. The convener of VII-NSFD was Dr. B.S. Semwal, Professor of Physics at Srinagar; he had been a former MSc student of Professor Krishnaji at the University of Allahabad.

At the time of this celebration, Professor Krishnaji was the Science Advisor to Maharishi Mahesh Yogi. He along with his wife Shrimati Bimla Asthana came to Srinagar, Garhwal in a car from Maharishi Nagar, Noida and reached there in the evening of October 2, 1992 (coincidentally, October 2 is the birth anniversary of Mahatma Gandhi, Father of the Indian Nation).

After the formal *inauguration* of the seminar on the 3rd of October, 1992, the session was dedicated to honor the Doyen of Dielectrics Research in India, Professor Krishnaji. The function started with the traditional ceremony of presentation of the shawl and bouquets to Professor Krishnaji and his wife. The participants of the conference and the students of Professor Krishnaji shared their experiences with him as a teacher and a research guide *par excellence*. He had helped

several research groups and individuals in remote places, of India, in establishing their microwave experiments for dielectric measurements*. He had made available the facilities of the Microwave Laboratory at the University of Allahabad to research workers from different parts of the country. Several speakers praised Professor Krishnaji for training graduate students such that after their doctorate degrees, they established their own independent research laboratories at their institutions. The list of places included: Solid State Physics Laboratory (SPL), Delhi; University of Delhi; Banaras Hindu University; Gorakhpur University; Ravi Shankar University, Raipur; Jiwaji University, Gwalior; Meerut University; and Sardar Patel University, Vallabh Vidyanagar. The tradition of high quality research at the University of Allahabad had been maintained at all these institutions. The session ended with the remarks of Professor Krishnaji that “*A teacher could not expect any thing better*”, moved every one.

On the 5th of October 1992, participants of NSFD went to Badri Nath Dham, Garhwal, and in the evening a concluding session (an *open house*) was held in a guest house there. Professor Krishnaji chaired this session. He gave his opinion on various issues raised in this open session; he advised the participants to collaborate in this field of interdisciplinary research lest the individual efforts wither out by duplication.

The session continued till late in the evening (10 p.m.). It was very cold in Badri Nath. Professor Krishnaji became unwell that night and needed medical help, which was immediately made available to him. He felt normal in the morning and all the delegates returned to Srinagar. Abhai Mansing and his wife Kalpana and Shyam Lal Srivastava accompanied Krishnaji to New Delhi in the same car on the 6th of October 1992.

Professor Ganesh Prasad Srivastava decided to publish a book commemorating the Seventieth birthday of Professor Krishnaji and approached scientists in the field of microwaves to contribute articles in their own areas of research. He received spontaneous positive response and the book “*Recent Advances in Microwaves*” edited by Ganesh Prasad Srivastava, was published by Narosa Publishing House, New Delhi. This book was released at the *National Symposium*

on *Advances in Microwaves*, held at Delhi University on March 1-2, 1993. This symposium was also organized to honor Professor Krishnaji for his pioneering research in the field of *Microwaves* as early as in 1950 in India and with indigenous skill (see Chapters 8 and 13, Part A of this book). This symposium was held only 3 weeks after the sad demise of Sri Raj Ranjan, younger son of Professor Krishnaji on 7th February 1993 in a car accident. Even after such a terrible personal tragedy, Professor Krishnaji did not disappoint the organizers and participated in the symposium, released the book and addressed the delegates; his calmness and poise was exemplary. (see Chapter 14, Part A, this book).

We consider it important to recognize the contributors (and contributions) of the book “Recent Advances in Microwaves”, mentioned above as they reflect the impact of Prof. Krishnaji on this field in India. The contributors (and their contributions) were:

N.D. Kataria, J.H. Hinken and Jaya Kumar (Microwaves High Temperature Superconductivity)

V.N. Ojha and A.K. Gupta (Microwave Integrated Josephson Series for Voltage Standard)

Ganesh Prasad Srivastava (Superconducting Microwave Resonators and Filters)

O.R. Baiocchi and T. Itoh (Pulse Propagation in High Temperature Superconducting Planar Transmission Line Structures)

Shyam Lal Srivastava (Microwave Dielectric Spectroscopy)

Ram Pal Tandon (Advanced Ceramics for Microwave Dielectric Resonators)

Dinesh Chandra Dube (Microwave Characterization of Dielectric Materials)

Pran Kishan (High Power Microwave Ferrites)

Devendra P.S. Seth (Modern Microwave Communication Systems)

Enakshi K. Sharma (Microwave and Light Wave Interaction)

Rajan Parrikar and Kailash Chandra Gupta (Integrated Microstrip Circuit Antenna Components)

A.K. Verma (Determination of Resonance Frequency of Multilayered Microstrip Patch)

and

R.S. Gupta and Rachna Sood (Analytical Modelling of Short Channel Devices).

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- * **Microwaves** are the electromagnetic radiation in the frequency range of 2-600 GHz ($1 \text{ GHz} = 10^9 \text{ c/s}$), widely used in RADAR, satellite communication and microwave ovens. **Dielectric materials** are the electrical insulators which store low frequency (less than 1 MHz (10^6 c/s)) electromagnetic energy in the medium, but at microwave frequencies they, besides storing, also absorb the energy due to rotation of the dipole moments of the constituent's molecules. Water is such a dielectric material absorbing energy in the food; thereby, the food is cooked very fast in the microwave ovens.

मेरे दादा

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यों तो इस सृष्टि में प्रभु की इच्छा के बिना पत्ता भी नहीं हिलता फिर भी मैं मानना चाहती हूँ कि मेरे धरती पर आने का कारण एक साढ़े छः वर्ष के लड़के की चाहत थी।

बात यूँ हुई कि भाई दूज के दिन उस लड़के को टीका लगाने उसकी चचेरी बहन आई। लड़का रूठ गया, घर के अंदर छिप गया। माँ ने बहुत समझाया, दुलारा, लेकिन वह नहीं माना तो नहीं माना। बहुत पूछने पर मुँह खोला, “मेरी बहन होगी तब मैं टीका लगवाऊँगा।” उचित-अनुचित कुछ सुनने को तैयार नहीं। संयोग ही था कि अगले वर्ष उसकी माँ ने एक बेटी को जन्म दिया। भाई दूज पर माँ ने बच्ची को गोद में बिठा कर उसके हाथ से साढ़े सात वर्ष के भाई के माथे पर टीका लगवाया। भाई निश्चय ही आनंद विभोर हुआ होगा, बहन को तो होश ही नहीं था, लेकिन होश होने पर जब यह वृतांत सुना तब से आज तक मन जो भीगा तो भीगा ही रहा।

वह लड़का था श्री विश्वेश्वर प्रसाद और श्रीमती सावित्री देवी का प्रथम पुत्र कृष्ण जी और लड़की थी, बहन मालती, जिसे घर में बिट्टी कहते थे। यही कृष्ण जी मेरे और मेरे भाईयों गोपाल जी और गोविंद जी के दादा थे। हम लोग जिस मोहल्ले में रहते थे वहाँ बंगाली परिवारों की संख्या अधिक थी। संभवतः हमने बड़े भाई को दादा कहना उन्हीं से सीखा। बहुत से लोगों को मेरे भाईयों के नाम के आगे स्वयं ही ‘जी’ लगाना विचित्र लगता था। वास्तव में ये नाम मेरे बाबू जी के चाचा ने रखे थे और बाबू जी ने स्वीकार कर लिया था। उनके जैसे चरित्र का व्यक्ति अपने बुजुर्गों की बात सिर आँखों पर रखता है।

जब दादा एमएससी में पढ़ते थे तभी बाबूजी ने दुनिया छोड़ दी। दिसम्बर में मृत्यु हुई, अगले मार्च में दादा की अन्तिम परीक्षा थी। कुछेक महीने हमारे चाचा हम लोगों

को अपने घर ले गये। अप्रैल या मई महीने में दादा को विभाग से रिसर्च फेलोशिप मिल गई। परीक्षाफल कुछेक दिनों बाद निकला। दादा ने हमारे ऊपर आँच नहीं आने दी। ऐसे ही कठिन दिनों में फेलोशिप मिलने के पहले उन्होंने ट्यूशन किया जिससे कुछ पैसे वह अम्मा के हाथ में दे सके। सहूलियत होते ही दूसरा मकान ले लिया। तबसे हमें पढ़ाना, बीमार माँ की देखरेख करना, हमारे विवाह, दोनों भाईयों को ऊँची पढ़ाई के लिए विदेश जाने पर मदद करने से लेकर जीवन पर्यन्त हम सब की, हमारे बच्चों की समस्याओं के हल से जुड़े रहे।

हम चार भाई बहन एक साथ पले बढ़े। इलाहाबाद ऐसी जगह थी जहाँ से शिक्षा के लिए किसी को बाहर जाने की ज़रूरत नहीं थी। मुझे अच्छी तरह याद है कि सबसे अधिक हम तीनों के लिए अपना हक छोड़ने वाले हमें माफ़ करने वाले, हमें छूट देने वाले दादा ही थे। गोविन्द जी के लिए तो वे कवच ही थे। सबसे छोटा था वह, मुझे उसे चिढ़ाते ही रहना था। उसमें नुक्स निकालते ही रहना था और दादा को उसे बचाते रहना था। कभी-कभी ऐसी घटना घटती जिससे गोविन्द जी की अच्छी खासी खिल्ली उड़ाई जा सकती थी। खासकर जब एक दुश्मन (मैं) उसकी किरकिरी करवाने के लिए कमर कसे रहती, लेकिन दादा का मोर्चा बड़ा तगड़ा था, गोविन्द जी का पाक, साफ रूप दिखाने में वह कोई कसर नहीं रखते। सोचती हूँ कितनी ममता से प्रेरित उनके कदम होते थे। बहुत दिनों तक गोविन्द जी को दादा अपने साथ ही सुलाते थे।

भइया (गोपाल जी) और उनके बीच की अधिक बातें मुझे याद नहीं हैं। कुछेक बातें याद हैं। जब भइया एमएससी की परीक्षा दे रहे थे तब वह बीमार पड़ गए। वह बिस्तर पर लेटे रहते और दादा पास में कुर्सी पर बैठ कर उनकी तैयारी करवाते। उसी तैयारी से भइया ने एमएससी की परीक्षा पास की।

जब वह कोई भावनात्मक, संवेदनात्मक या बीमारी के धक्के से गुजरते दादा की गुहार लगाते। दादा इलाहाबाद से दिल्ली आते, उन्हें बल देते, समझाते। वह सँभल जाते। वह स्थिति भइया के अवकाश प्राप्त करने पर भी बनी रहीं। जिसे ऐसा संबल प्राप्त हो उससे बढ़कर भाग्यवान कौन होगा?

अम्मा बीमार रहती थीं। बाबूजी अधिकतर दौरों पर रहते थे (वे उत्तर भारत में ऑक्सफोर्ड यूनिवर्सिटी प्रेस के प्रतिनिधि थे)। दादा जब बीएससी की अन्तिम परीक्षा दे

रहे थे अम्मा को ब्रांकाइटिस या न्यूमोनिया हो गया। अम्मा के बिस्तर के बगल में कुर्सी पर बैठ कर वह पढ़ते रहते और तीमारदारी भी करते। दोनों ही काम करते-करते पूरी रात जाग कर काट देते। हमलोग उनसे छोटे जरूर थे लेकिन इतने भी छोटे नहीं थे कि उनका हाथ नहीं बटा सकते थे, शायद वह लियाकत और वह जन्मजात जिम्मेदारी की भावना नहीं थी, जो उनमें थी। उनके समर्पित व्यक्तित्व को देखकर मन में जो कुछ होता था उसे मैं जाहिर नहीं कर सकती हूँ। मन एक अनकही अनुभूति से आप्लावित हो जाता।

जब बाबूजी गए तब भी वही थे। बचपन से ही जो ममता और संरक्षण दादा ने दिया वह पितृत्व था। यह क्षमता उनकी ईश्वर प्रदत्त थी, न कि बाबू जी की अनुपस्थिति में थोपी हुई एक जिम्मेदारी का निर्वाह। ऐसी थोपी हुई जिम्मेदारी जिसमें मधुर भाव नहीं रहता, शिकायत भरी, रूखी सूखी होती है। आज 81 वर्ष की अवस्था में दोनों का भेद मैं भली भाँति पहचान चुकी हूँ।

दादा ने इलाहाबाद विश्वविद्यालय के भौतिकी विभाग में शिक्षक पद प्राप्त किया। जिम्मेदारी थी। पढ़ने वाले दो भाई, एक बहन की, पत्नी, कुछेक साल बाद घर आए बच्चों की तथा बीमार माँ की जिनकी आवश्यकता थी नियमित दवादारू, डॉक्टर, तीमारदारी। उधर अम्मा ममता की मूर्ति थी, तो इधर दादा श्रवण कुमार।

हमारा जीवन बिना प्रश्न चिन्ह लगाए चलता रहा। सभी की जरूरतें पूरी होतीं, पूरी करने वाले के चेहरे पर शिकन देखे बिना। दादा खुशमिज़ाज और जिन्दादिल व्यक्ति थे, वह सदैव एवमस्तु की मानसिकता से जीते थे। वह कैसे प्रबंध करते थे यह तो वही जानते थे किन्तु उन्होंने कभी भी मुझे अभाव की अनुभूति का मौका नहीं दिया। उनके इस तारीफेकाबिल गुण ने मेरे व्यक्तित्व को सहज, खुला हुआ और सकारात्मक बना दिया। ऐसे व्यक्ति के सामने जो खड़ा भी हो जाता है उस पर कुछ बूँदें प्रेम की अवश्य पड़ जाती हैं। मैं उस बनावट से बच गई जो अपने विकास क्रम में नहीं, नहीं सुनते-सुनते स्वयं “एक बड़ा नहीं मात्र” बन कर रह जाता है।

अगर मैं अपने से जुड़ी उनकी ममता, उनकी उद्विग्नता और उनकी आँख में अपने महत्व को याद करूँ तो इतनी घटनाएँ हैं जिन्हें मैं समेट नहीं पाऊँगी।

दादा की नजर पैनी थी, दूसरों की आवश्यकताओं, चाहतों को सूँघ लेने की विचित्र माद्दा थी। एक बार की बात, शहर में नुमाइश लगी थी, हम सब देखने गए। कई दुकानों

पर रूके, कहीं केवल देखा, कहीं कुछ खरीदा। एक साड़ी की दुकान पर भी गए। साड़ी की दुकान पर कब उन्होंने मेरी वह नजर पकड़ ली जो एक खास साड़ी पर महज क्षणिक टिकी रह गई थी। घूमघाम कर हम सब घर आ गए। उन्हें लग गया कि वह साड़ी मुझे भा गई है। और बस, इसी मकसद से दूसरे दिन, बिना बोले वह तीन चार मील दूर जाकर साड़ी ले आए। उस दिन उनके पास उतने पैसे नहीं बचे थे। रोएँ खड़े न होते तो क्या होता!

दूसरी घटना याद है। मेरे वायलिन टीचर ने कहा कि एक पुराना जर्मन वायलिन महज 35/- रू. में मिल रहा है, तुम ले लो। मैंने घर जाकर भाभी से कहा। भाभी के पास उतने पैसे नहीं थे। बात दादा के कान में पड़ी। उन्होंने भाभी से क्या कहा, मुझे नहीं मालूम, हाँ पैसे मुझे मिल गये।

मैं दोस्तनवाज़ थी। सहेलियों का अकेले भी और झुंड में भी आना जाना लगा रहता। भाभी को खातिरदारी में घर में जो करना था वह तो घर की बात थी। रौनक भी घर में हो जाती थी। दादा सबके दादा थे, भइया सबके भइया थे और भाभी सबकी भाभी थीं, अम्मा अम्मा। समस्या तब खड़ी होती जब मुझे दोस्तों के घर दोस्तानी पार्टियों में जाना पड़ता, दादा ने मुझे बहुत छूट दी लेकिन अकेले कहीं जाने नहीं देते। अम्मा ने साइकिल सीख लेने पर भी चलाने नहीं दी। गोविन्द जी से वह कहते 'जाकर बिट्टी को पहुँचा दो और जब कहे ले आना।' थोड़ी भी आना-कानी करने पर उन्हें छोड़ देते क्योंकि वह किसी को दबाव में रखना पसन्द नहीं करते। लेकिन दादा को तो देखना था कि मैं जाऊँ। वह दूसरे विकल्प को बुलाते। दूसरा विकल्प था हमारा बूढ़ा माली। उसका नाम सुनते ही मेरी साँस ऊपर नीचे होने लगती, क्योंकि वह रिक्शे पर मेरे पैर के पास बैठता और मेरी सहेलियों को खिल्ली उड़ाने का सशक्त हथियार मिल जाता। लेकिन मौजमस्ती के माहौल को याद करती तो गम खा जाती। जब माली भी नहीं होता तो दादा, एक विश्वविद्यालय के शिक्षक, साइकिल पर रिक्शे के साथ-साथ जाते, मुझे पहुँचाने। ऐसे मौके पर मेरा मन दुःखी हो जाता और तौबा करती अब किसी सहेली के घर नहीं जाऊँगी। लेकिन तौबा थी कि सदा ही टूटती थी।

हौसला अफ़ज़ाई दादा की रग-रग में बसी थी। मैं एक बार परीक्षा देकर आई रोना-धोना शुरू। खबर मिली दादा को। आकर पूछा क्या हो गया? जवाब मिला बीस नम्बर

का सवाल छूट गया। जोरदार आवज़ आई, “वाह। बहुत बढ़िया। अरे अस्सी नम्बर का सवाल किया और क्या चाहिए, एग्जामिनर को लूटना है क्या? “भाभी से बोले,” इसके सिर में तेल डालो और खिलाओ-पिलाओ।” यह कहते हुए चले गए, बैठक में बैठे मित्रों से गपशप करने। टच हीलिंग बहुत कारगर होती है। राहत पाकर मैं दूसरे दिन की तैयारी में लग गई।

उस समय की बात है जब मैं इण्टरमीडिएट में पढ़ती थी। द्वितीय वर्ष की छात्राओं को विदाई देने के लिए उत्सव था। मैं भी इतज़ामकारों में थी। आखिरी वक्त में कैटरर ने धोखा दे दिया। बदहवास हम सब रेंआसे हो गए। लेकिन मैं तो थी अटूट सहारे वाली। दादा तक रूँआसी आवाज पहुँची और वह जितनी जल्दी हो सका, हम सब को साँस दिलाने साइकिल पर आए और साथ में लाए कैटरर। आज भी मेरी कोई सहेली मिलती है तो दादा की चर्चा करती है।

संकट में कभी नहीं छोड़ना उनके स्वभाव का अंग था। संकट का हल वह भरसक खोज ही लेते थे। व्यक्ति चाहे हमारा रिश्तेदार हो या कोई अनजान। गाढ़े समय में उनसे राहत पाने का अधिकार सभी को था। कितने-कितने दिनों तक दूसरे परिवार ज़रूरत पड़ने पर हमारे घर रहे। कितनी लड़कियों की शादी हमारे घर से हुई है। निःस्वार्थ भाव से बिना किसी एहसान के जीवन चलता रहता और ऐसे जीवन के टिकने का एक ही मजबूत स्तंभ था... दादा। ईश्वर ही उनका पर्स सँभालता था।

दादा का प्यार, उनकी देखरेख, उनकी परवाह, उनकी चिन्ता शब्दों में नहीं, कर्म से ही व्यक्त होती। एक बार मैं बीमार पड़ी। दवा एक होमियोपैथ डॉक्टर की हो रही थी जो हमारे परिवार के डॉक्टर थे। मैं ठीक नहीं हो रही थी। एक दिन युनीवर्सिटी से लौटने पर पूछा “बिट्टी कैसी है?” उन्हें पता चला सुधार नहीं है। बस क्या था, डॉक्टर की क्लिनिक पहुँचे। बोले, “डाक्टर साहब सुन लीजिए, अगर कल सुबह तक बिट्टी की तबियत ठीक नहीं हुई तो मैं आपका दवाखाना उखड़वा दूँगा।” ये शब्द मात्र कहने के शब्द थे, वास्तव में थे वे मेरी परवाह से जन्मे सात्विक क्रोध की अभिव्यक्ति। उन शब्दों का कोई अभिधात्मक अर्थ नहीं था। हाँ, प्रभु की कृपा से दूकान उखड़ने से भी बच गई।

मैं दुबली पतली थी। डॉक्टर ने सलाह दी कि कैल्शियम का इंजेक्शन लगवा कर देखिए। कम्पाउंडर आया, इन्ट्रावीनस इंजेक्शन के लिए नस खोजने में खून निकल

आया। बस आ गई उस बेचारे की शामत, ऐसी डाँट उसके कानों से टकराई कि वह उल्टे पैर लौटा ही नहीं, ऐसे भाग खड़ा हुआ कि हिदायत भी शायद नहीं सुन पाया 'खबरदार दुबारा मत आना।'

मेरी शादी हो गई। छपरा गई, फिर भागलपुर आ गई। जिन मसलों को लेकर घरों में तहलका मच जाता है, लड़के, लड़कियों का जीना दूभर हो जाता है, माँ-बाप या अभिभावक मानसिक यातना से गुजरते हैं, वही मसला महज़ समझदारी से सुलट गया। घर ही में दादा और मेरे बीच डाकिए का काम किया भाभी ने। दादा मेरी पसंद भांप गए, उन्होंने आवश्यक जानकारी के लिए दौड़-धूप की और आश्वस्त होकर मेरा हाथ सहपाठी को सौंप दिया। वर कन्या की जन्मपत्री कितनी मिली मैं नहीं जानती, लेकिन इतना निश्चित है कि साले बहनोई की जन्मपत्री ऐसी मेल खाई कि जान छिड़कने वाले भाई की बहन को कभी अफ़सोस करने का मौका ही नहीं मिला।

दादा पूरी तरह से इंसाफपसंद, सच्चे, आत्मसम्मानी और पैसे को जीवन जीने का साधन मात्र समझने वाले थे। बाबूजी के देहान्त के पश्चात् स्कूल में मेरी फीस माफ हुई। यह स्थिति मुश्किल से छः महीने रही होगी कि दादा को विश्वविद्यालय से रिसर्च फेलोशिप मिल गयी। जैसे ही पता चला दादा ने मेरे स्कूल खत भेज दिया कि अब मालती की फीस माफ़ करने की ज़रूरत नहीं है। मेरी प्राचार्या और शिक्षिकाओं के बीच मेरा सिर ऊँचा हो गया।

दादा से जुड़े मानवीय स्तर के प्रमाण तो न जाने कितने हैं। उनकी इसी विशेषता के कारण चारों तरफ से लोग उन्हें प्यार से दादा कहते थे, चपरासी हो तो, अड़ोस-पड़ोस का कोई हो तो, अपने से छोटे सहकर्मी हो तो, नौकर-चाकर हो तो। एक बार की बात है, एक लड़की साइकिल पर आई जो कुछ परेशान लग रही थी। दादा ने पूछा 'क्या चाहती हो?' वह बोली, 'मुझे एक रिकमेंडेशन लेटर चाहिए।' ऐसे पत्र के लिए जरूरी जानकारी...किसके नाम, आफिस का नाम, पोस्ट का नाम आदि दादा ने पूछा। हर बात पर उसका जवाब था 'मालूम नहीं'। दादा कुछ देर चुप रहे। फिर उसकी शिक्षा के बारे में पूछ कर एक पत्र उसे दे दिया, बिना कुछ कहे। जब वह लड़की चली गई तब मैंने कहा 'इतने बेवकूफों की आप कैसे मदद करते हैं?' जवाब था "जिनके पास

बुद्धि कम है, उन्हें ही मदद की ज़रूरत होती है।” उनकी बात सुनकर मेरी झुंझलाहट थोड़ी सी शांत हो गई।

दादा आदमी की इज़्जत करते थे। वह कोई भी हो। यह गुण अम्मा में भी था, शायद उनके दिल से इस गुण ने ढलक कर दादा के दिल में स्थित उसी गुण की गुणवत्ता को और बढ़ा दिया हो। साधु संत, भिक्षार्थी के लिए नकारात्मक जवाब उनके पास नहीं था। एक बार की बात है। वह अपने छोटे बेटे की शादी के बाद बारात लेकर लौट रहे थे। एक स्टेशन पर एक साधु ने सबके सामने हाथ फैलाया। दादा के मित्रों ने साधु को कोई तवज़्जो नहीं दी। दादा ने अपने पर्स से कुछ निकालकर दे दिया। मित्रों ने मजाक बनाया ‘ठगे गए न तुम।’ इतने में साधु ने प्लेटफार्म से मिट्टी उठाई और दादा से कहा ‘लो, मुट्ठी खोलो’, और मिट्टी उनके हाथ पर रख दी, फिर मुट्ठी बंद करने को कहा। कुछ देर बाद उसने कहा, ‘मुट्ठी खोलो’, जब मुट्ठी खुली तो उसमें मिट्टी नहीं चावल के कुछ दाने थे। जाते जाते साधु बोल गया, ‘इसे अपने बटुए में रख लो, आश्विन मास में तुम्हें इतना पैसा मिलेगा कि इस बटुए में नहीं अँटेगा।’ अगस्त या सितम्बर में दादा को सी वी रमन अवार्ड मिला। निश्चय ही वह खुला पैसा पर्स में नहीं अँटता।

मेरे घर में अम्मा पूजा पाठ करवाती थी। पण्डित जी से बच्चों की जन्मपत्री दिखवाती और ज़रूरत के मुताबिक पूजा-पाठ, गृह शान्ति भी होती। दादा थे विज्ञान के आदमी, किन्तु ज्योतिष-शास्त्र में विश्वास करते थे। कभी-कभी परिस्थितिवश या होनी वश नहीं भी मिला पाए। एक बार मैं बीमार पड़ी। उस समय हमलोग शान्तिनिकेतन में रहते थे। दादा को खबर मिली, उन्होंने मेरी जन्मपत्री दिखाई, तुरंत गृह शान्ति के लिए पूजा करवाई तथा मेरे लिए एक जन्म पहनने के लिए भेजा, इस ताक़ीद के साथ कि फौरन पहना दो।

आज मैं जो हूँ उनकी वजह से ही हूँ। बाबू जी की मृत्यु के पश्चात (जिस समय वह खुद पढ़ाई कर रहे थे, तथा आमदनी का कोई जरिया नहीं था) उन्होंने तय कर लिया कि एक बार भाईयों की पढ़ाई कुछ दिनों के लिए रूक जाये लेकिन बिट्टी की पढ़ाई नहीं रूकेगी। उनके इसी निश्चय के कारण मैं भागलपुर में सुंदरवती महिला महाविद्यालय में इकतीस वर्षों तक शिक्षिका रही और आज सोलह वर्षों से पेन्शनयाफ़्ता हूँ। अन्त समय

तक उन्हें मेरी हर परिस्थिति, हर समस्या की परवाह थी। वह हमसे कभी दूर नहीं रहे। उनके सामने जब हमलोग विदेश गए तब उन्होंने हर व्यवस्था को देखा, हवाई अड्डे तक पहुँचाया, इलाहाबाद से दिल्ली आकर। ऐसा ही उन्होंने मेरे बच्चों के साथ निभाया। एक व्यक्ति था जिसके पास किसी क्षण, किसी ज़रूरत, किसी संकट में बेधड़क पहुँच सकते थे। गलती करने पर डर नहीं, बेवकूफी करने पर कद छोटा होने की आशंका नहीं, एक ओर दादा बहुत खुशमिज़ाज़, मज़ाकिया, महफिल में छा जाने वाले थे तो दूसरी ओर उनमें कठिन से भी कठिन परिस्थितियों का सामना करने का असीम साहस, अटूट धैर्य और तोड़ देने वाली प्रभु की मार के सामने अपूर्व सहनशीलता थी। ऐसा ही प्राणी अपने इर्द गिर्द के लोगों का आका बन सकता है। न जाने कितने मौके जीवन में ऐसे आए जब वे इन कसौटियों पर खरे उतरे। याद है वह समय जब उनके चालीस वर्षीय छोटे बेटे रंजन की मृत्यु कार दुर्घटना में हो गई थी। अकेले वह थे जो छाती पर पत्थर रख कर भाभी को, रंजन की पत्नी पूनम को, जो अस्पताल में थी और दो बच्चों को सँभाल रहे थे, घर में इकट्ठा हुए लोगों के लिए व्यवस्था कर रहे थे। कुछ ही दिनों बाद दिल्ली विश्वविद्यालय में उन्हें ही सम्मानित करने के लिए एक बड़ा आयोजन था। बुलाने वाले संकोच में डूब गए। लेकिन उनका निर्णय सुनकर मैं तो हैरत में पड़ गई। उनका सोचना था कि अकेले अपनी वजह से, अपने दुःख से आयोजकों की इतने दिनों की मेहनत, व्यवस्था को रद्द कर उन्हें संकट में डालना ठीक नहीं और वह निर्धारित समय पर लखनऊ से दिल्ली पहुँच गये। हाथ में ब्रीफकेस लिए जब वह सीढ़ी से उतर रहे थे उस समय उनके चेहरे की तस्वीर सूने क्षणों में कभी कभी उभर आती है। आयोजन में उपस्थित लोगों को मालूम हुआ होगा कि वह किसी विशेष व्यक्ति को देख रहे हैं, सुन रहे हैं।

दादा में बुद्धि की गहराई और हृदय की विशालता का मेल था। मैंने उनके हृदय पक्ष की ही चर्चा की है। मुझे लगता है प्यार चूँकि तरल होता है इसलिए वह अनुकूल धरातल पाकर आसानी से फैल जाता है। मुझे दादा ने जो प्यार दिया वह उनके दिल से भाभी के दिल तक, भाभी के दिल से बच्चों के दिल तक फैल गया।

भाभी ने मेरे विवाह के बाद हर वर्ष मेरे लिए तीज भेजी। मैं जब भी कहती कि बहुत हो गया अब कितना भेजिएगा। तब वह कहतीं “लड़कियों को जितना दो उतना ही कम

है।” अन्त समय तक उन्होंने यही कहा और निभाया। 2007 में भाभी नहीं रहीं। तीज के कुछेक दिन पहले दादा की बड़ी पुत्र वधु मधु ने फोन किया, “बुआ तीज आ गई है, मम्मी (भाभी) की तरह तो मैं नहीं कर पाऊंगी, लेकिन मैं कुछ भेज रहीं हूँ पूजा के लिए।” मैंने कल्पना भी नहीं की थी कि भाभी अपना मन मधु को पकड़ा कर जाएँगी। मेरा मन ऐसा भीगा कि कुछेक क्षण चारों ओर से कट गई। होश में आने पर सातवें आसमान पर पहुँच गई। लगता रहा धरती भी अपनी है और आसमान भी मेरा अपना ही है। निश्चय ही सूक्ष्म स्थूल से अधिक वजनी, अधिक व्यापक होता है। प्यार के सामने लक्ष्मी, कुबेर नहीं ठहर सकते।

दादा

राधा कृष्ण सहाय

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घर, परिजन, विश्वविद्यालय के परिचित सभी उन्हें दादा पुकारते थे। शुरू शुरू में अजीब लगा, परंतु बाद में, समझ में आ गया कि यह संबोधन प्यार का संबोधन है। उन्हें दादा इसलिए कहते थे कि बचपन उनका बंगला भाषा भाषी मोहल्ले में बीता और वहीं उनके छोटे भाइयों और बहन ने भइया न सीख कर दादा शब्द सीखा। बाद में दादा के जब अपने बच्चे हुए तो उन्होंने भी बुआ, चाचा को सुनकर दादा पुकारना शुरू किया। दादा संबोधन की यात्रा यहीं रूकी नहीं, इसलिए कि वह इतने भरोसेमंद थे कि लोग उनसे भावनात्मक स्तर पर जुड़ते गए। घर बाहर के लोग अपनी समस्याएँ उनके सामने जरूर रखते और वे थे कि पलक झपकते उन समस्याओं का हल निकाल लेते।

एक बार मैंने उनसे पूछा था, “दादा, आप इतनी जल्दी कैसे किसी समस्या का हल ढूँढ लेते हैं?” उनका जवाब था, “हर समस्या का हल उसी के भीतर छुपा होता है। केवल भीतर झाँक कर देखने की जरूरत होती है।”

जून 24, 1953 को मेरी शादी मालती के साथ हुई और उसी दिन से मैं दादा के साथ जुड़ गया। उनके व्यक्तित्व में एक आकर्षण था जो बहुत ही तरल और मधुर था। तब से आज तक की बातों या घटनाओं को जब कभी याद करने की कोशिश करता हूँ तो सामने दो तस्वीरें आ जाती हैं। पहली तस्वीर है दादा का अम्मा के सामने खड़ा होना। अम्मा कृशकाय थीं, बिस्तर से सटी हुई। पंख की तरह हल्की, और दादा जब भी घर में होते तो अम्मा के सामने होते। हनुमान भक्त थीं। मुझे लगा था, दादा हनुमान के रूप में उनके सामने खड़े हैं। कई बार मुझे ऐसा लगा था, एक बरगद वृक्ष अपनी समस्त शाखाओं-प्रशाखाओं के साथ अम्मा के सामने झुका खड़ा है।

अम्मा और दादा का संबंध आत्मिक था। ऐसा संबंध जो आज विरल है- वही दादा

जब 14 बी बैंक रोड वाले बंगले का गेट खोलकर बाहर निकलते तो रीढ़ की हड्डी मानो तन कर सीध में आ जाती। दादा को किसी परिस्थिति या किसी व्यक्ति के सामने झुकते हुए नहीं देखा। मैंने उनको वाइस-चांसलर के सामने भी देखा, महर्षि महेश के सामने भी देखा। उनका आत्मसम्मान हर पल व्यक्ति के सामने बना रहा।

मुझे याद है सन 1966। अम्मा की मृत्यु की सूचना मिली थी। ट्रेन में सवार सोच रहा था- दादा कितने विचलित होंगे। दादा ने बहुतेरे उच्च पद, देश, विदेश के, अम्मा के लिए छोड़े। उन्हें इलाहाबाद नहीं छोड़ना था। वहाँ पहुँचने के बाद मैंने पाया कि दादा चट्टान की तरह शांत है। बारह पंडितों का मंत्रोच्चार एक साथ हवा में गूँज रहा था। उस समय दादा प्रमुख पंडित से बात कर रहे थे, “आदमी जो कर सकता है वह अपने जीवन काल में ही, मृत्यु के बाद तो सब लोकाचार होता है।” पंडित जी ने पूछा, “किस रीति से अंतिम संस्कार हो?” उत्तर मिला, “पंडिज जी, आप बेहतर जानते हैं, वैसे बाबूजी का संस्कार आर्यसमाजी पद्धति से हुआ था।” पंडित जी ने कहा, “लेकिन, माता जी का संस्कार तो सनातनी रीति से होना चाहिए। वे सनातनी थीं।” पंडित जी की बात उन्होंने स्वीकारी। तेरह दिनों तक सारी विधियों के साथ दादा ने अम्मा का संस्कार किया। क्षण भर के लिए भी कभी विचलित नहीं दिखे।

इसी तरह, उनके जवान बेटे रंजन की दुर्घटनावश मृत्यु हो गयी। हम भागकर लखनऊ गये। उस समय भी दादा को अविचलित और अजेय देखा था। बल्कि वह भी कि तीन दिनों के संस्कार कार्य के बाद दिल्ली गए। उनके छात्रों ने किसी विशेष अवसर पर उनके सम्मान में एक संगोष्ठी का आयोजन किया था। उन्हें वहाँ देखकर सभी अवाक थे। दादा ने उस संगोष्ठी में पूरी निष्ठा के साथ भाग लिया था। मन में उनके भाव था कि आयोजकों का परिश्रम, खर्च व्यर्थ न जाये।

लेकिन, एक दूसरी तस्वीर भी है मेरी याद में जो एकदम विपरीत है। अपनी शादी के बाद हम बारात के साथ घर लौट रहे थे। रामबाग स्टेशन से गाड़ी खुलती थी। हम दोनों अलग कम्पार्टमेंट में थे। रास्ते में खाने का इंतजाम दादा करवा रहे थे। ट्रेन चलने को हुई, वह मेरे पिताजी के पास गए। फिर वह आकर मेरे कम्पार्टमेंट का हैण्डल पकड़ कर खड़े हो गए। ट्रेन ने जब सीटी दी तो दादा की आँखों से बड़ी बड़ी बूँदें टपक रहीं थी। वे आंसू मानो उनके चट्टानी व्यक्तित्व पर स्फटिक की तरह चमक रहे थे। वे आँसू

मेरे सामने आज भी हैं। 57 वर्ष के वैवाहिक जीवन के मर्यादित जीवन सफर में उन आँसूओं का बहुत बड़ा हाथ रहा है।

वे आँसू मेरे जीवन में आत्मबोध जगाते रहे हैं...

गर्मी की छुट्टी होती, हम अम्मा से मिलने इलाहाबाद पहुँच जाते। वह जब तक रहीं हम हर साल अम्मा के पास पहुँचते रहे।

एक बार की बात है। अम्मा का मन नहीं था कि हमलोग इतनी जल्दी लौटें। टिकट कट चुका था। दिन और समय निश्चित था। गाड़ी सुबह 9 बजे प्रयाग स्टेशन से खुलती। हम तैयार हो चुके थे लेकिन, आखिर में पाया कि मेरे जूते ही नहीं। दादा कहने लगे, “अब तो जूता खरीदा जाएगा तभी तुम जा सकोगे। चलो पहले जूता लिया जाएगा।” दादा ने हमें रोकने की ऐसी तरकीब निकाली कि हमें रूकना ही पड़ा। ट्रेन का समय बीतते ही मेरे जूते मिल गये।

उन दिनों दादा अपने विभाग में रिसर्च करते और करवाते भी। बहुत व्यस्त रहा करते। इलाहाबाद विश्वविद्यालय तो क्या पूरे उत्तर भारत में माइक्रोत्रेव के अध्ययन की नींव उन्होंने डाली। जे.के. इन्स्टीट्यूट जो इलाहाबाद विश्वविद्यालय का हिस्सा था, उसी में माइक्रोत्रेव के लिए अलग से वातानुकूलित प्रयोगशाला बनी थी। दादा अक्सर मुझे साथ ले लिया करते। मैं इलाहाबाद की गर्मी से बच जाया करता। अपने व्यस्त समय में से समय निकाल वे मुझे रविवार के दिन सिविल लाइंस में स्थित प्लाज़ा हॉल में मशहूर फिल्में दिखाने ले जाते। उनके साथ अनेक साइंटिफिक फिक्शन देखने को मिला। एच.जी. वेल्स का ‘ब्रेव न्यू वर्लड’ तथा अन्य मशहूर फिल्में वहीं देखीं।

दादा का यह रूप एक वैज्ञानिक का था, खोजी का था। वे अक्सर कहा करते, “साइंस की पढ़ाई के बिना शिक्षा अधूरी होती है।”

मुझे साफ साफ याद है, एक बार हमसे मिलने की गरज से उन्होंने तेज नारायण जुबिली कॉलेज में प्रैक्टिकल की परीक्षा स्वीकार कर ली। विभागीय लोगों ने उनसे लेक्चर देने का भी अनुरोध किया। उन्होंने दो लेक्चर दिए थे। एक फिजिक्स विभाग के प्रोफेसर और छात्रों के लिए, दूसरा व्याख्यान उनका कॉलेज हॉल में हुआ था। पहला लेक्चर अंग्रेजी में था। दूसरा विषय हिन्दी में। दोनों भाषाओं पर उनका समान अधिकार

था। हॉल में बोलते बोलते उन्होंने कहा था, “अगर कहीं ईश्वर है तो विज्ञान जरूर उन्हें खोज निकालेगा। इतना ही नहीं, विज्ञान एक ऐसी सीढ़ी बनाएगा जिसके सहारे हर व्यक्ति उन तक पहुँच सकेगा।” ऐसी आस्था जिसका आधार विज्ञान था, मुझे और कहीं देखने को नहीं मिली।

दादा जब बोलते तो बीच में उन्हें कोई रोक नहीं सकता था। लगातार धाराप्रवाह बोलते थे। कितनी ही बार ऐसा होता कि खाने की मेज पर घर के लोग इन्तज़ार करते थक जाते और दादा थे कि बैठक से उठने का नाम नहीं लेते। गोविन्द जी कुछ हल्ला गुल्ला करते जिससे उनके मित्र उठना ही उचित समझते। किन्तु दादा को गोविन्द जी की यह हरकत नागवार गुजरती। इसी तरह जब वह फोन पर बात करते तो उनकी बातों का कोई अन्त नहीं होता। असल में वे इतने मानवीय थे कि सबसे जुड़ जाते थे, उनकी बातों का, उनकी समस्याओं का हल ढूँढते रहते थे।

दादा वैज्ञानिक तो थे ही, वे सपना भी खूब देखते थे। मुझे याद है, आँगन में खाट पर बैठ कर वह ऐसे बंगले की कल्पना करते जिसके टॉप पर पूरी तरह एक शीशे का कमरा होता। यहाँ तक कि छत भी शीशे की होती। बारिश हो, या धूप ऋतु कोई भी हो जिस कमरे से प्रकृति की छटा का आनन्द लिया जा सके। उस पर मजा यह कि ऐसा रिमोट जिसके सहारे छत खुलती-बंद होती हो। याद रहे, तब तक “रिमोट” की कल्पना सामने नहीं आई थी, कम से कम भारत में तो नहीं। इस कल्पना की गिरफ्त में जाकर भी अपनों के खिंचाव और गरमी को नहीं भूलते। कहते इस बंगले में नीचे हिस्से में एक गोलाकार आँगन होगा। उसके चारों ओर तुम्हारा, गोपाल जी, गोविन्द जी और मेरा कमरा होगा।

दार्शनिक और वैज्ञानिक रूप में दादा जितने पुख्ता थे, उतने ही वह सामाजिक/पारिवारिक रीति-रिवाजों के निर्वाह में पक्के थे। मेरी शादी के बाद दादा हम दोनों को प्रत्येक रिश्तेदार के पास मिलाने ले गए थे। इलाहाबाद तो इलाहाबाद, लखनऊ तक जहाँ उनके चचेरे भाई रहते थे।

दादा की नजर अपने से कमजोर लोगों पर खास रहती। उनके ससुराल के एक दो लोग आर्थिक रूप से कमजोर थे। जब हम इलाहाबाद गए, दादा हमें उनसे मिलाने ले गए। एक तो ऐसे थे जो रोज आया करते। साथ तो खाना खाते ही, लौटते वख्त

रिक्शेवाले को किराया भी दादा दे दिया करते। दादा एक ऐसे आदमी थे जिनके साथ की गर्मी बराबर महसूस हुई, और वे किसी अवसर पर चूके नहीं... चाहे मेरी बेटी की शादी हो या उनसे संबंधित कोई समस्या हो।

पारिवारिक या सामाजिक सम्बन्धों के मूल में छिपी मानवीय पवित्रता दादा के व्यावहारिक जीवन का मूल मंत्र थी। एक घटना। अंजु (मेरी बेटी) की शादी में विदाई के वक्त मैं चुपचाप भागकर बगल के बाग में घुस गया था। पता नहीं, कैसे दादा ने पहले समझ लिया था। आँख रखी थी मुझपर। ठीक वक्त पर वे मेरे पास आ गए और मुझे बहला कर, समझा कर अंजु के सामने खड़ा कर दिया।

विश्वविद्यालय से अवकाश प्राप्त कर वे महर्षि महेश के नोएडा आश्रम चले गये। वहाँ वह वैदिक गणित पर रिसर्च करवा रहे थे। उनके साथ रिटायर्ड चीफ जसटिस भी थे।

आश्रम जाने का मौका मुझे भी मिला। महर्षि की खुली सभा में भी मैं था। देखा था, महर्षि ने दादा को पूरे आदर के साथ अपने पास की कुर्सी पर बैठाया था। महर्षि का कहना था, सभी काम धीरे-धीरे, आराम से करें। भाभी से महर्षि अक्सर कहते, “माता जी, जिस चीज की ज़रूरत हो, भंडार से मँगा लीजिए। घी, दूध का सेवन करें। जिस तरह रहना चाहें, आराम से रहें।” सचमुच उन दिनों भाभी का भंडार जितना भरा पूरा था, उतना मैंने कभी नहीं देखा।

फिर भी, परिस्थितियाँ दादा के जीवन में बराबर विपरीत रहीं। उन्हीं दिनों अपने पुत्र के सहायतार्थ आश्रम से पाई जाने वाली पाँच हजार रू. की राशि प्रत्येक मास बैंक को दे देना ही उचित समझा। उनका काम उनकी साख पर चला। बहुत सी संस्थाओं से कुछ काम आता रहता। तारीफ है उनकी रहाइश की कि उनके संबंध निर्वाह में कहीं कमी नहीं आई। मैंने उनके चेहरे पर शिकन तक नहीं देखी।

दादा ने हमें महर्षि से मिलाया था। समय था रात के ढाई बजे। महर्षि कब सोते थे, किसी को पता नहीं चलता था। हमलोग ठीक सवा दो बजे रात में उनसे मिलने पहुँचे। उस समय महर्षि किसी जापानी डेलीगेशन से मिल रहे थे। ठीक समय पर हम महर्षि के हॉल में प्रविष्ट हुए। महर्षि धवल फूलों के बीच बैठे थे। उस रात महर्षि ने

केवल मुझसे बात की। विषय था, भाषा की उत्पत्ति। लगभग ढाई घंटे तक हम उनको सुनते रहे। नींद का नाम नहीं। मैं, मालती और दादा तीनों पूरी तरह चैतन्य अवस्था में थे।

निश्चय ही दादा के कारण मुझे ऐसा अवसर मिल पाया था।

कुछ ही दिनों बाद दादा के छोटे बेटे रंजन की अकाल मृत्यु हुई। महज 40 वर्ष की अवस्था। लखनऊ में कम्प्यूट्रानिक्स के मैनेजर थे। इस हादसे ने उन्हें महर्षि आश्रम छोड़ने को मजबूर किया। बहू और बच्चों की व्यवस्था की गरज से इलाहाबाद आ गए। उनकी स्वतंत्र व्यवस्था के लिए बड़े बेटे के मकान के पास ही एक मकान खरीद दिया। कम्पनी से मिली रकम की सुचारू व्यवस्था कर दी।

हम दोनों सेवा मुक्त हो चुके थे। इलाहाबाद में उनके साथ लगभग एक माह रहे। चाहे कैसी भी परिस्थिति हो दादा सकारात्मक ही सोचते। बहुत दिनों से उनके मन में एक योजना थी, माँ और पिताजी के नाम एक ट्रस्ट बनाने की। ट्रस्ट का नाम था, 'Vishveshwar Prasad and Savitri Devi Charitable Educational Trust'। दादा बच्चों का एक स्कूल खोलना चाहते थे, जिसमें बँधे-बँधाये कोर्स का कोई बंधन नहीं हो। बच्चे पूरी तरह अपने ढंग से, अपनी प्रकृति के अनुसार विकसित हों।

दादा का यह अंतिम सपना परिवार, समाज और प्रकृति के बीच एक कड़ी के रूप में था। दादा ने बहुत चाहा उन्होंने आग्रह किया कि मैं उस ट्रस्ट का उत्तरदायित्व ले लूँ, और वहीं बस जाऊँ। परन्तु मेरे लिए यह संभव नहीं हो सका। मेरे पिता जी बीमार थे। वे काशी वास करना चाहते थे। साथ ही अन्य और व्यक्तिगत समस्याएँ भी थीं। मैं उनकी बात नहीं रख सका।

मुझे यह भी याद है, भाभी जब उदास होतीं तो दादा कहते, “चिन्ता किसलिए, जिस पंडित ने मेरी जन्मपत्री देखी है, उसने कहा है कि तुम मेरे पहले जाओगी।” भविष्यवाणी रखी की रखी रह गई। 14 अगस्त 1997 को दादा भाभी को छोड़कर चले गए। पीछे मुड़कर सोचता हूँ, कहीं दादा को अपने संसार छोड़ने का आभास तो नहीं था।

दादा ने कभी किसी बात के लिए मुझसे उस तरह आग्रह नहीं किया था, जैसा उस समय किया था। क्या वे इसीलिए मुझे इलाहाबाद में रोकना चाहते थे?

Allahabad and University of Allahabad

*“It moves. It moves not.
It is far, and it is near.
It is within all this,
And It is outside of all this”*
(Source: Isa Upanishad)

We, the editors (Govindjee and Shyam Lal Srivastava) of this book, are from Allahabad and had studied at Allahabad University. A snippet of Allahabad follows for those who are not familiar with this city and its University. We know that the list of “*Allahabadis*” given in the text that follows is incomplete. We thank Braj B. Kachru and Rajni Govindjee, two ex-alumni of Allahabad University, for reading and improving this text.

First, we refer the readers to the information that is available on the internet. See, for example:

[1] <http://allahabad.nic.in/entrypage.htm>

[2] <http://en.wikipedia.org/wiki/Allahabad>

[3] <http://www.allduniv.ac.in/>

[4] http://en.wikipedia.org/wiki/Allahabad_University

A brief description of **Allahabad** follows.

- Allahabad, a historical city of India, is in the state of UP, Uttar Pradesh; it is situated at the *Sangam* (i.e., confluence; referred to as *Triveni*) of two rivers *Ganga* (Ganges) and *Yamuna* (also called Jamuna), and the third, an invisible *Saraswati* (that has now dried up). Allahabad is known for culture, literature, politics, religious traditions, divinity and spirituality; it is one of the largest cities of UP, and had also been on the forefront of Science. Here, at Allahabad, Vedic culture, Buddhism, Islam, Western thoughts

and Scientific Culture have come together bringing a unique brand of intellectual ethos of its own.

- Its ancient name was *Prayag*, and is preserved in the minds of many. In the *Skand Purana*, *Brahma*, the creator, is said to have performed ***Prakrista Yagna*** in the beginning of the creation; thus, the name Prayag (see e.g., *Manu Smriti*, *Valmiki Ramayana*). It has been the king of all pilgrimages (*Teertha Raj*). In Hindu mythology, it is said that a few drops of nectar (*Amrita*) fell on this spot while Lord Indra was carrying away the coveted Amrita-filled pitcher depriving the demons of their share after recovering it as a result of churning of the ocean.
- At Allahabad, each year a month long festival, *Magh Mela* and every 12th year *Kumbha Mela* is held at Sangam where devotees, seers, sages and scholars from distant parts of the country and beyond, gather.
- A great Hindu philosopher and sage *Bharadwaj* lived in Prayag ~ 5000 BCE; it is said that he had ~ 10,000 disciples. *Bharadwaj Ashram* at Allahabad is a relic of the past; it is said that here Bharadwaj welcomed Lord *Rama* when he was going South on his 14 year exile after relinquishing the throne of Ayodhya. (According to legends, it is here that Rishi Yagyavalkya had narrated the story of Ramayana to Bharadwaj.)
- In 1575, Moghul emperor Akbar laid the foundation of a new district *Subah-é-Illahabas*; the city of *Illahabas* later became known as Allahabad. Akbar built the Fort (*Kila*) of Allahabad near the Sangam which took more than 45 years to complete. Inside this fort, opposite to the main entrance is the *Ashoka* pillar; this pillar was installed long ago in the 3rd century BCE; it bears certain edicts of Ashoka besides a Persian inscription that was added later by Jehangir to commemorate his accession to the throne. (The other attractions within the fort are the Patalpuri temple and the *Akshayavata*, the undying banyan tree.)
- In 1801, Allahabad was taken over by the British; it was made an important military base. In 1858, it was called Allahabad by the British; in 1868, it became the seat of Justice when the High Court was built; in 1871, the British architect Sir William

Emerson erected the majestic All Saints Cathedral in Allahabad.

- In 1872, (Sir William) Muir Central College was established as an affiliate of Calcutta University. Its foundation stone was laid by Lord North Brooke on December 9, 1873. It took 12 years to complete it and was designed by William Emerson. In 1887, the 4th oldest University was built here, the University of Allahabad that has produced some of the best statesmen, scholars, poets, and scientists in the past. A photograph of the beautiful Vijaynagaram Hall and its tower is shown as the frontpiece of Part A of this book.
- Allahabad is famous for our War of independence from the British, starting already with the 1857 freedom movement. Anand Bhawan, the home of the famous Nehrus, was later to be the center of the freedom movement. It was in Allahabad that Mahatma Gandhi proposed his non-violent resistance (*Satyagraha*) against the British. Allahabad was also the home of: Chandrasekhar Azad, a revolutionary and a mentor of Bhagat Singh, Pundit Motilal Nehru, the famous lawyer; and Purushottam Das Tandon, another freedom fighter.
- Allahabad boasts of having been associated with a large number of former Prime Ministers of India: Jawahar Lal Nehru; Lal Bahadur Shastri; Indira Gandhi; Rajiv Gandhi; Vishwanath Pratap Singh; Gulzarilal Nanda; and Chandra Shekhar (Singh).
- Allahabad had the fortune of being visited by the most influential figures in the country. It included Mahatma Gandhi (Father of the Nation); Sarvapalli Radhakrishnan (Philosopher and Former President of India); Madan Mohan Malviya (Founder of Banaras Hindu University); Sarojini Naidu (Poet, and a former Governor of West Bengal); Sir C. V. Raman (Nobel-laureate in Physics); Rajendra Prasad (Former President of India); Lala Lajpat Rai (The so-called Lion of India); Acharya Kriplani (Freedom Fighter); and Vallabh Bhai Patel (The first Home Minister of India).
- Allahabad has been a seat of learning, wisdom, literature and poets; it was the home of Akbar Allahabadi; Harivansh Rai “*Bachchan*” (Srivastava); Amitabh Bachchan (the movie idol of

India); Raghupati Sahai *Firaq* (Gorakhpuri); Mahadevi Verma; Sumitranandan Pant; Maithali Sharan Gupta; and Suryakant Tripathi *Nirala*; Rahul Sanskritayan; Hriday Nath Kunjru (Founder of Servants of India Society); and Prabhudutta Brahmachari. [Both Bachchan ji and Firaq Sahib lived very close to the house where Krishnaji lived.]

- Among other stalwarts who taught at Allahabad University were: Meghnad Saha (Physics); K.S. Krishnan (Physics); Neel Ratan Dhar (Chemistry); Shri Ranjan (Botany); Birbal Sahni (Paleobotany); Panchanan Maheshwari (Botany); Ishwari Prasad (History); S.C. Deb (English); Phiroz E. Dustoor (English); Prakash Chandra Gupta (English); Ram Kumar Verma (Hindi Critic); Dhirendra Verma (Linguist), Baburam Saksena (Linguistics); Udai Narain Tewari (Linguistics); and Arvind Krishna Mehrotra (Author of “Last Bungalow”). Two Vice Chancellors of Allahabad University that Govindjee remembers well were Amarnath Jha and A.C. Banerji.
- Among the ex-alumni of Allahabad University (not listed above) are: Govind Ballabh Pant (Chief Minister of UP); Acharya Narendra Deb (Freedom fighter); Shankar Dayal Sharma (Former President of India); Maharishi Mahesh Yogi (A great spiritual leader); Ranganath Mishra (Former Chief Justice of India); K.N. Singh (Former Chief Justice of India); Gopal Swarup Pathak (Former Vice President of India); Raghunandan Swarup Pathak (Chief Justice, Himachal Pradesh); Daulat Singh Kothari (Physicist); Kundan Singh Singwi (Physicist); Harish Chandra (Mathematician); Govind Swarup (Physicist); Krishnaji (Physicist— to whom this book is dedicated); H.N. Bahuguna (Former Deputy Prime Minister of India); Murali Manohar Joshi (Former Union Minister, Human Resource & Development); Kamleshwar (Journalist, Literary and Television figure); Makhan Lal Fotedar (Former Home Minister of India); Vidya Niwas Mishra (Late Vice Chancellor of Sanskrit University, Varansi and a Hindi writer); and Nandkishore Gupta Devraj (Hindi writer and critic). Among many others, we mention: Braj B. Kachru (Linguist); Suresh Chandra (Physicist – Solid State Ionics); Rameshwar Bhargava (Nanotechnologist); Govindjee (Plant

Biologist - Photosynthesis); Rajni Govindjee (Biologist), and many others who have written tributes to Krishnaji in this book, including Krishnaji's brother Gopalji (Business Executive), his sister Malati Sahay (Hindi Educator), his brother-in-law Radha Krishna Sahay (Hindi writer and critic), and his student Shyam Lal Srivastava (Physicist).

- We are proud to mention that Allahabad was the home of the most famous flutist of India, Pandit Hari Prasad Chaurasia.
- When the Platinum Jubilee Celebrations of the National Academy of Sciences at Allahabad was celebrated, A.P.J. Abdul Kalam, the then President of India, was the Chief guest to whom “Science is a passion, a never ending voyage into promises and possibilities”, a view which recalled Albert Einstein's words portraying himself “*I have no special talents, I am only passionately curious*”.
- Amaresh Misra has written about “The Town India Forgot” (Source: <http://outlookindia.com/diary.asp?listsubsec=q&fodname=19980629>)

“Allahabad today is a stagnating city which refuses to decay. The whitewash on the Romanesque arches and Greek columns of the bungalows is wearing off. The famed broad roads, structured on a grid-like pattern even in the old city area (once the envy of North India), stretch like abandoned dance floors of the great hotels of yore—still grand but less proud, jaded but not faded. This was a city with an ice-cream parlour, the *Guzders*, before which Bombay joints looked like stalls at a village fair. [*Govindjee remembers the Guzders where he would go for ice cream on special occasions.*] Snobbery came natural to aficionados of El Chico's movie-like restaurant decor. There was a class cabaret, the Gaylords, in the civil lines in the [19]60s when Delhi hid its nightlife behind sleazy doors. Delhi was Punjabi, crude and downtown. Allahabad was intellectual, upmarket and aristocratic; the girls were stoic, alluring, upper class and exclusive—a living amalgam of Brahmavarta elitism, modernity and westernism. During the day black coats of High Court barons flashed with condescending aura in the pillared halls of their great Georgian villa. In the evening, the men in black quoted Shakespeare and Voltaire

while smoking foreign cigars. They had a way of drinking beer and a way of watching the *mujra* at exclusive haunts near the Ganga. Both the cabaret and the *mujra*, the west and the east, rubbed shoulders as non-colonial cousins. Old timers still remember Janki Bai '*chhappan chhuri*' (she had 56 knife wounds on her body, courtesy of a sour lover) singing, full blast on a public crossing, about the *jalwa* (honour and sheen) of the beauty walking with '*das gunda aage*' and '*das gunda peeche*!'”

On the Perceptions of the Divine

Govindjee is thankful to the following friends for their generous and highly valuable participation in his quest to collate texts on the Perceptions of the Divine in various faiths: Narendra Ahuja, Dilip Chhajed, Pradeep Dhillon, Stephen Downie, Hans Hock, Zarina Hock, Jain Swarup Jain, Braj Kachru, Yamuna Kachru, Rajeshwari Pandharipande, and Rizwan Uddin. Our quest is rather incomplete not only because we were unable to find views of several faiths, but it is the nature of the quest itself. Further, no attempt was made to have uniformity in presentation. The participants in this current quest are quoted, but they are not responsible for any errors made here.

A. Views of Hinduism on the ‘Perceptions of the Divine’, as presented by Rajeshwari Pandharipande follows.

1. The Divine is indestructible

‘Weapons do not cut it; fire does not burn it. Neither does water wet it; the wind cannot dry it.’ —*The Bhagawadgita*, 2: 23.

2. The Divine is the energy in the universe

‘The luminous energy of the sun illuminating the world, the same that is in the moon and fire, know that radiance to be mine.’—*Bhagawadgita*, 15: 12.

3. The form and the formless are one and the same Divine

‘He who is formless is also endowed with form. To His Bhaktas [disciples] he reveals Himself as having a form. It is like a great ocean, an infinite expanse of water, without any trace of shore. Here and there some of the water has been frozen. Intense cold has turned it into ice. Just so, under the cooling influence, so to speak of the Bhakta’s love, the infinite appears to take form. Again, the ice melts

when the sun rises; it becomes water as before. Just so, one who follows the path of knowledge, the path of discrimination, does not see the form of God any more, to him everything is formless. The ice melts into formless with the rise of the sun of knowledge. But mark this: form and formlessness belong to one and the same reality'.—*The Gospel of Shri Ramakrishna, p 370.*

4. *The relationship between Maya, the transient world, and Brahman, the eternal Divine*

‘Maya and Brahman are one like the person and his shadow.’—*Tukaramanchi Gatha, Abhanga, 65:1.*

5. *The beauty of the loving form of the Divine: Vitthal*

‘That beautiful one is standing on the brick. Let my inclination always be to be with Him. He has the *Tulsi*-garland around His neck and He wears the beautiful *pitambara*. I am fond of this exquisite beauty of His. Tukaram says, this is indeed my utmost joy to see this auspicious face of Shri Vitthal!’—*Tukaramanchi Abhanga, 2:1.3.*

[Notes: Tulsi (Holy Basil)—*Ocimum tenuifloru (or sanctum)*; garland is made of the dried stems of the plant; Pitambara—means ‘yellow garments’, derived from Sanskrit (*pita*) ‘yellow’ and (*ambara*) ‘garment’; Vitthal—refers to Vishnu.]

6. *God is one, called by many names*

‘The One being the sages call by many names as they speak of Indra, Yama, Matarishwan. The wise poets with their words shape the One being in many ways.’—*Rigveda, 10:114:5.*

B. Hans Hock provided the following passage from the Rigveda (10.1.129.7).

इयं विसृष्टिर्यत आबभूव यदि वा दधे यदि वा न ।
यो अस्याध्यक्षः परमे व्योमन्त्सो अंग वेद यदि वा न वेद ॥

In English ‘This creation, whence it came about, whether it was created, or not, Who is the overseer of this (world) in highest heaven,

he indeed knows, unless he does not know’.

C. Rizwan Uddin presented the following passages from the Upanishads.

—‘Invisible, intangible, having neither family nor caste, devoid of eye and ear, devoid of hands and feet, eternal, [all]-pervading, penetrating everywhere, most subtle, changeless,—so do the wise discern It,—Womb [and origin] of [all] that comes to be.’—*Mandukya Upanishad, 1.i.6*

—‘Eye cannot see Him, nor words reveal him; by the sense, austerity, or words, He is not known. When the mind is cleansed by the grace of wisdom, He is seen by contemplation—the One without parts.’—*Mandukya Upanishad, 3.1.8.*

—‘He is the One God, hidden in all beings, all-pervading, the Self within all beings, watching over all works, dwelling in all beings, the witness, the perceiver, the Only One, free from qualities.’—*Svetasvatara Upanishad, 6.11.*

[For further contribution by Rizwan Uddin, see section G.]

D. Perceptions from the Jain faith were provided by Jain Swarup Jain and Dilip Chhajed.

—‘Every living being has a soul; every soul is potentially divine with innate, though typically unrealized, infinite knowledge.’

—‘Jainism prescribes a path of non-violence for all forms of living beings in this world. Its philosophy and practice relies mainly on self-effort in having the soul progress on the spiritual ladder to divine consciousness. Any soul which has conquered its own inner enemies and achieved the state of Supreme Being is called *Jina* (Conqueror or Victor). Jainism is the path to achieve this state.’

—‘Jains do not believe that the universe was created by God or by any other creative spirit. Jain writings question the very idea of God, although they do believe in the ‘Divine’ [as noted above]: If God created the world, where was He before creation? If you say he was transcendent then, and needed no support, where is He now? No

single being had the skill to make this world—For how can an immaterial God create that which is material? If God is ever perfect and complete, how could the will to create have arisen in him? If, on the other hand, He is not perfect, He could no more create the universe than a potter could.’

E. Text from Deuteronomy, from the Jewish faith, on the perception that ‘God is one’ was provided by Stephen Downie.

—‘Hear, O Israel: The Lord our God, the Lord is one’—*Deuteronomy, Chapter 6: article 4.*

—‘That you will know that God is the Supreme Being and there is none besides Him’—*Deuteronomy 4:35.*

—God your Lord is the God of gods and the Master of master—*Deuteronomy, 10:17.*

—But now see – it is I! I am the only One! There are no (other) gods with me! —*Deuteronomy 32:39.*

F. Passages from the Christian faith were provided by Zarina Hock.

—‘In the beginning was the Word, and the Word was with God, and the Word was God. The same was in the beginning with God. All things were made by him; and without him was not anything made that was made. In him was life; and the life was the light of men. And the light shines in darkness; and the darkness comprehended it not.’ —*Gospel of John, chapter 1, verses 1-5.*

—[Jesus’ words as recorded] ‘You shall love the Lord, your God with all your heart, and with all your soul, and with all your mind. This is the great and foremost commandment. And a second is like it, You shall love your neighbor as yourself. On these two commandments depend the whole Law and the Prophets.’ —*Gospel of Matthew, chapter 22, verses 37-40.*

—[Jesus’ words as recorded] ‘Give to everyone who asks of you, and from the one who takes what is yours do not demand it

back. Do to others as you would have them do to you'. —*Gospel of Luke, chapter 6, verses 30-32.*

—[Jesus' words as recorded] 'You have heard that it was said, "You shall love your neighbor and hate your enemy." But I say to you, love your enemies, bless those who curse you, do good to those who hate you, and pray for those who spitefully use you and persecute you, that you may be sons of your Father in heaven; for He makes His sun rise on the evil and on the good, and sends rain on the just and on the unjust.' —*Gospel of Matthew, chapter 5, verses 43-48.*

— 'God is love' —*First epistle of John, chapter 4, verse 8*

G. Text from the Muslim faith was provided by Rizwan Uddin.

—'This is the God, other than which there is no deity: the Sovereign, the Holy, Peace, the Giver of Safety, the Protector, the Almighty, the Omnipotent, the Overwhelming; glory to God, beyond any association they attribute. This is God, the Originator, the Creator, the Shaper, to whom refer the most beautiful names,' —*Quran, 59: 23-24.*

—'The Almighty is known by His many names or attributes. Some of them are: The Compassionate; The Holy; The Source of Peace ; The Creator; The Great Forgiver; The Sustainer, The Provider; The All-knowing ; The Just; The Subtle One, The Generous One, The Gracious; The Wise ; The Truth ; The Restorer, The Giver of Life ; The Creator of Death; The Eternal, The Independent ; The First ; The Last; The Manifest ; The Hidden ; The Lord of Majesty, Bounty.' —*See 99 Names of Allah (God).*

—'Fatihah' : what some call the Quranic equivalent of the Lord's Prayer. Here it is: (1) In the name of God, Most Gracious, Most Merciful; (2) Praise be to God, the Cherisher and Sustainer of the world; (3) Most Gracious, Most Merciful; (4) Master of the Day of Judgment; (5) Thee do we worship, and Thine aid we seek; (6) Show us the straight way; (7) The way of those on whom Thou hast

bestowed Thy Grace those whose (portion) is not wrath, and who go not astray.

H. A passage from Guru Nanak (1544-1603) was provided by Pradeep Dhillon.

‘Wonder inspiring are the books of revelation!

Wonder inspiring the forms!

Wonder inspiring the colors!

Wonder inspiring, the air!

Wonder inspiring, the water!

Wonder inspiring the play of fire!

I have been struck with wonder to see the wondrous play;

Nanak only the blessed ones understand.’

I. The Nature of Divine, from two couplets of Kabir Das (15th century) was provided by Yamuna Kachru.

जैसे तिल में तेल है ज्यों चकमक में आग,

तेरा साईं तुझ में है जाग सके तो जाग।

In English

Just as the oil is inside the sesame seed, just as the fire is inside the flint stone Your God is inside you, wake up if you can.

ज्यों नैनों में पुतली त्यों मालिक घर माहिं,

मूरख लोग न जानिहें बाहर दूंदन जाहिं।

In English

Just like the pupil in the eyes, your God lives inside you. The ignorant don't know this; they go and search Him outside.

J. A visionary message about the Divine from a Kashmiri poet

(the late Zinda Kaul ‘Masterji’)* was presented by Braj B. Kachru.

On Masterji’s 66th birthday, the 24th of July 1949, his admirers – and there were plenty of them—insisted that he write a message for them. And here is one written by Masterji, as he says,” with much hesitation.”

‘If I had another life to live as a human being, I would have firm faith in God as the highest ideal of “Truth, Goodness and Beauty.” I would make my religion what is common to all religions, namely – Belief in the highest ideal and worship of the highest by unselfish service rendered to all living beings; health of body, mind and heart; and purity of mind and speech. I would hate no man, but would fight to the last against all menace of injustice and evils wrought by misguided man. I would look upon woman as an incarnation on earth of the world mother, would love children as heirs to the Kingdom of Heaven, and respect the meanest toiler as a pillar and prop of society.’

*Who was Masterji? Pandit Zinda Kaul (1884-1965), affectionately called ‘Masterji’ (respected teacher) by his friends, was a saintly Kashmiri poet born in Srinagar, Kashmir. He was the first Kashmiri poet to be honored with a Sahitya Academi Award in 1956 on his collection of Kashmiri poems entitled *Samaran*. India’s most distinguished linguist Suniti Kumar Chatterji said that in conferring the award on Masterji, Sahitya Academi had honoured itself. Masterji wrote poetry in Urdu, Persian, Hindi and Kashmiri.

A detailed discussion on Zinda Kaul Masterji’s life and literary contribution is published in *Kashmiri Literature* (1981) by Braj B. Kachru. Wiesbaden: Otto Harrassowitz, pp. 49-55.

K. Narendra Ahuja has provided the following thoughts on the place God occupies in Vedanta.

The experiences and visions of numerous Vedic sages about the nature of existence, arrived at after observation, analysis, experimentation and introspection over thousands of years, are distilled into the philosophy of Vedanta—the extract of the Vedas. It

pervades Indian thought. The Advaita—non-dual—expression of the Vedanta vision says that there is nothing but *Brahman*. Everything is but a manifestation of the Brahman. All worldly parameters and their perceptions, even if unfathomably complex, are but projections of that infinite reality. Like clay in different pots, and like cotton in different garments, Brahman is the defining unity under the perceived diversity of the world. Like the dream world, rich and real as it looks, is made of one stuff, the dreamer's mind, so is the diversity of the world, although perceived as real by one lost in it, a manifestation of Brahman. Like the deer sees the mirage, in place of the desert whose appearance it is, so one sees the world, and not its unifying reality of Brahman. The aim of Vedanta is to shake people out of this illusion, so that what is termed as perception of God instead becomes identification with Him.

This defining theme runs through all four Vedas (Rig, Yajur, Atharva and Sama), and is captured in the following celebrated *Shloka* (in Sanskrit) from *Isha Upanishad* in *Yajur Veda*:

ॐ पूर्णमदः पूर्णमिदं पूर्णात्पूर्णमुदच्यते ।
पूर्णस्य पूर्णमादाय पूर्णमेवावशिष्यते ॥

That is :

That (Brahman) is infinite. This (universe) is infinite. Only from infinite has come infinite. Take away infinite from infinite and what is left is infinite.

The four *Mahavakyas* (great sentences) from the four Vedas traverse the fundamental relationship between the world and the Brahman slightly differently:

1. *Pragnanam Brahma*: Consciousness is Brahman (*Aitareya Upanishad*, in *Rig Veda*).
2. *Tat twam asi*: That Thou are (*Chandogya Upanishad*, in *Sama Veda*).
3. *Ayam Atma Brahma*: This Self is Brahman (*Mandukya Upanishad* in *Atharva Veda*).

4. *Aham Brahma asmi: I am Brahman (Brihadaranyaka Upanishad in Yajur Veda).*

Throughout the ages, the sages have declared from personal experience that the realization of the above otherwise abstract relationship, as opposed to its logical analysis and acceptance, is within the reach of every human being. They have developed ways for doing this, to suit every shade of human psyche. These recipes for living exhibit a mind-numbing level of precision in the understanding of the human nature, with all its common strengths and frailties. These ways have percolated into everyday stories that most Indians grow up hearing. Not only they have been popular themes of poetry in all languages across India, e.g., in Kabir (Section I, Yamuna Kachru) and Nanak's (Section H, Pradeep Dhillon) writings cited above, but they have found expression even in the relatively young language *Urdu* and its powerful poetry. For example, Azad Ansari (1871-1942) has beautifully stated how the sages have claimed an ordinary person could develop clarity of vision about everything, namely by dissolving ego, or separate identity:

बेखबर, कर-ए-खबर मुश्किल नहीं,
बेखबर हो जा, खबर हो जायेगी।

That is :

Oh you lost one (in the illusory world), it is not difficult to find way (see reality). Lose yourself (your ego), and you will come to know (Brahman).

Another noted Urdu poet, Mohammad Iqbal (1877—1938), explains the major role Vedanta advocates for mind and reason, as a tool for searching and recognizing the path to self-realization, lest one gets lost in mind's own playful attractions, and forgets the destination:

गुज़र जा अक्ल से आगे, कि ये नूर,
चिराग-ए-राह है, मन्ज़िल नहीं है ये।

That is:

Aim beyond the reaches of the mind, because this light is only a lamp to show the way (a tool to discriminate right from wrong), it (a manifestation) is not the destination (Brahman).

And finally, in the following Urdu couplet, Azad Ansari captures the foundational equation of Vedanta, about the identity between the human and Brahman, which is obscured from the view of an ordinary person by the illusion that is the world:

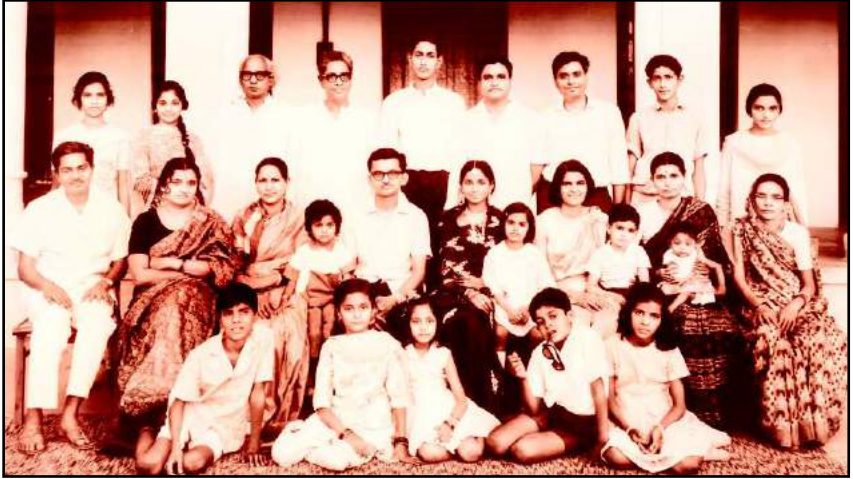
इन्सान की बदबख्ती अन्दाज़ से बाहर है,
कमबख्त खुदा होकर, बन्दा नज़र आता है।

That is:

The misfortune of human being (manifestation of Brahman) is beyond description. Poor fellow, despite being Brahman, comes across as being an ordinary, weak human.

We end this book with the following quotation from
 Gautama Buddha (2,500 years ago).
 It is the best Tribute to Dada and his way of life.

“Believe Nothing
 Merely Because You have been Told
 It
 Or Because You yourself Imagined It.
 Do Not Believe What Your Teacher
 Tells You
 Merely out of Respect For The
 Teacher.
 But Whatever, After Due Examination
 And Analysis
 You Find To Be Conducive To the
 Good
 The Benefit
 The Welfare of All Beings
 That Doctrine, Believe and Cling To
 And Take It as Your Guide....”



A 1968 photograph of Bimla and Krishnaji family. *Standing (left to right)* : Amita (Mannu, Bimla's niece), Anju, Laxmi Kant Verma (Bimla's brother-in-law), Krishnaji, Deepak, Gopalji, Govindjee, Ranjan and Manju. *Sitting on chairs (left to right)* : Radha Krishna Sahay, Nirmala, Bimla, Ila, Suresh Chandra, Meenu, Anita, Rajni, Sanjay, Malati (in her lap is Anupam), Savitri Verma (Bimla's sister). *Sitting on the floor (left to right)* : Rajeev (Bimla's nephew), Rita, Chitra, Anshu and Rashmi (Bimla's niece)

Appendix

The following wonderful *Tribute* to my Dada **Krishnaji (1922—1997)** was received on **January 4, 2020**, and is reproduced below as a *Reminiscence* by **Dr. Satyendra Bhandari** (Scientist, EX-SAC-ISRO, Ahmedabad, India; email: space.scientist@gmail.com). He has also provided a group photograph (see the bottom of this page)—**Govindjee** (e-mail: gov@illinois.edu).

Reminiscence of KrishnaJi **by** **Satyendra Bhandari**

The name Krishnaji - itself evokes something more than just a great person, something more than ordinary, beyond human or even divine!! He was indeed special - extraordinary and great. The 290- page elaborate tribute by his family, his students and his colleagues is proof itself.

Meeting Prof. Krishnaji once was enough to learn about his nature... highly affectionate, highly respectful, magnanimous and much more.

Friends, you would be wondering as to why am I talking about Prof. Krishnaji? I may not match the qualities and the high accomplishments of many who have paid their homage by sharing their memories of the time they spent with Prof. Krishnaji. True, very much true! In fact, I never ever had even been to Allahabad, let alone undertake any research work with Prof. Krishnaji. My first and only visit (a great experience...) to Allahabad happened after my superannuation (retirement) from SAC-ISRO for conducting a Thesis exam of a M. Tech. student and giving an Invited talk in the Department at Allahabad.

However, it sometimes happens that a *Higher Power* comes down to meet the man on the street! Rarely though!. Yes, I had the great fortune to meet and be his blessed student during my M. Sc. Physics course. Where? At my native place: Jodhpur, Rajasthan, India. This was during 1966-1968 when Prof. Krishnaji was appointed as Head of the Physics Department of the nascent Jodhpur University (later renamed as Jai Narayan Vyas University).

When I was a student of M. Sc. (Physics), Prof. Krishnaji taught us *Electronics*. He was indeed a marvelous teacher and I/we enjoyed his lectures very much. The other great professor we had was Prof. S. Loknathan who taught us Nuclear Physics wonderfully well. These two together instilled and inspired me to go for higher education and research, rather than take up a job as a Lecturer offered then. Sadly the atmosphere was not very conducive for research. More politics than Physics. More than the teaching, Prof. Krishnaji's responsibility was to establish proper labs and to set things right.

Krishnaji did his best. Jodhpur being what it is, with its royal history and culture, sweet respectful language, delicious food and more (Our own colleague and Krishnaji's student Dr. P.C. Pandey [whose Tribute to Krishnaji is included in the Book, published in 2010] will vouch from whatever little experience he gathered during his visit to Jodhpur to attend my daughter's marriage in 1973, if nothing else.) Krishnaji was charmed by the affectionate nature of people and developed a deep liking for the place. So much so that when he was to go back to Allahabad, it was an emotional thing for him. In my whole life, I have witnessed and been a part of two tearful farewells involving teachers --when students wept and the teachers got so emotional that they sobbed. One such event for me was when I was in 3rd standard and our General Science teacher was leaving the school. The second and last such event was when Prof. Krishnaji was leaving Jodhpur. After the big *Farewell* in the Department, the scene, when we all went to Jodhpur Railway Station to see him off, remains etched in my memory--such an emotional and tearful event! Krishnaji, with enormous number of garlands around his neck, was indeed deeply moved-- constantly waiving to all of us—while standing at the door of his coach. Many times he attempted to get down to touch whoever was nearby. He said he had developed such a liking for the place and the people here that he is feeling he is leaving his home.

Unfortunately, I do not have any pictures of that event to convey how emotional and tearful the scene was. However, I have a group photograph of our M. Sc. (Prev.) batch with Prof. Krishnaji. This I am sure adds to the Gallery of pictures included in the main Tribute in the book! Anyway, the above is from someone who had an opportunity to meet Prof. Krishnaji as a young student and be inspired by his personality.

A copy of the photograph taken in 1967 is shown on the following page.

DEPARTMENT OF PHYSICS

UNIVERSITY OF JODHPUR
FAREWELL TO PROF. KRISHNAJI
M. SC. (PREVIOUS) PHYSICS
1966 - 67



Sitting Left to Right : M. L. Mehta, K. K. Singh, A. S. Gehlot, Dr. G. L. Gupta, Prof. Krishnaji, A. D. Vyas, C.P. Joshi,
S. M. Bhandari.
Standing Left to Right : C. L. Mehta, C. A. Singhvi, R. L. Methur, M. S. Charan, V. D. Rathi, N. K. Dave, R. K. Mandhana,
V. K. Nigam.