

Wings to a child's dreams

"A Tribute To Govindjee"

by Virendra Kumar



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Virendra Kumar
Mathura, India
January 26, 2020

Introduction

I met *Dr. Govindjee*, who prefers that I call him Govindjee, at a conference organized by the National Academy of Science of India (NASI), held at Allahabad, on *February 28, 2015*. There, he gave a lecture on photosynthesis, in which he vividly brought to our attention how the process of photosynthesis works, as well as its importance for plants and for us, the human beings.

His way of delivering this lecture (speech) was full of joy. I was amazed to see his passion for photosynthesis. At that time, he was 82 years old, but his enthusiasm (love) with photosynthesis was like that of a youngster. He spoke for 90 minutes, bringing to life all the existing known aspects of photosynthesis, and challenged us to improve it for the benefit of us all.

At around four in the afternoon, his speech was over, and this was a time when many of the teenager boys and girls surrounded him and were talking with him and asking for *selfies* with him.

I also requested for a *selfie* and introduced myself; he was delighted to hear that I came from the city of Mathura (birthplace of *Lord Krishna*), and he gave me his email id.

I met Govindjee again on *October 22, 2017* (2 days before his 85th birthday) at the Aravali Guest House, on the JNU (Jawaharlal Nehru University) Campus, when he was in New Delhi. At this time, he discussed with me his published research papers, reviews and books. (He also introduced me to his wonderful and highly informative web page at: <http://www.life.illinois.edu/govindjee/>).

And, then, he encouraged me to work on my English; he also asked me about my studies and plans for my upcoming future. During this discussion on his research and his enthusiasm for teaching photosynthesis, I told him that I was interested in writing an article on him.

In the USA, Govindjee had been called “*Mister Photosynthesis*” by many. He said – sure, you can start working on that. Thus, it is a pleasure for me to write this tribute, but at that time, I was afraid to write it since it required higher skills than what I had. But I did not lose courage; I started to write some simple paragraphs on him in Hindi.

Once again, in 2019, Govindjee came to India, and on the day (March 24), when he was leaving for USA, he sent me an email around 7 PM to say 'Goodbye.' (Actually, I was planning to meet him since I had heard that he was in India.) In my reply to his e-mail, I asked him for the time of his flight. He said it was the next day, early at 3 AM! After hearing this, I decided to meet him that very night.

I met him and his wonderful wife Rajni – late at night ~ 11 PM – at the JNU Campus when he was leaving the Aravali Guest House for the Indira Gandhi Airport; yes, it was a brief meeting, but it was an unforgettable one for me.



Govindjee - The Legend a Perpetual Student of the Twenty- First Century

Govindjee, the most celebrated legendary *plant physiologist* in the world who has used only one name – almost all his life – grew up in Allahabad (India). He was born on *October 24, 1932*, to (Mrs.) Savitri Devi Asthana and (Mr.) Vishveshwar Prasad Asthana.

His father was a college teacher and served as the General Secretary of U.P. (then, United Provinces, now Uttar Pradesh) Teachers Association. Later, he became the representative of the Oxford University Press (OUP) in Northern India. He was fluent in English, Hindi, and Urdu. After his death in 1943, Govindjee's older brother Krishnaji was responsible

for bringing him up and served as his role model. (Krishnaji passed away in August 1997.)

Govindjee's second brother Gopalji, who lived in Gurgaon (Haryana) with his wife Nirmala, is also no more. Govindjee's sister, Malati lived in Bhagalpur (Bihar) with her husband Radha Krishna Sahay: both are no more. The family name, Asthana, was dropped by Govindjee's father in response to the 'Arya Samaj Movement' that was against the 'Caste System'; its focus was (and is) on the ideals of the original Vedas and Upanishads. Govindjee went to Urbana, Illinois, USA, in 1956, with his name written on his Indian passport as 'Govind Jee'. He was not happy to be called "Mr. G. Jee", and thus, he began to use 'Govindjee' as his only name, which has indeed caused problems in citations, and in many formal settings.

He has been referred to by many names: F.N.U. Govindjee (where F.N.U. stands for First Name Unknown); I. Govindjee (where I stands for Illini); Mister Govindjee; and once A.V.P. Govindjee (where A stands for Allahabad and VP are the initials of his father). Since 2019, his formal name is Govindjee Govindjee.

Govindjee met Rajni Varma in 1953 when they were M.Sc. students of Botany (Plant Biology), at Allahabad University; she was a year junior to him. They were married on *October* 24, 1957, at Urbana, Illinois, when both were Ph.D. students of the world-famous Robert Emerson (see e.g.

Govindjee, 2001, 2004, 2018; Rabinowitch, 1961). Rajni and Govindjee have two children: Anita and Sanjay. Anita is a software engineer at IBM, and is married to Morten Christiansen, who is a Professor of Psychology at Cornell University, Ithaca, NY; they have one daughter, Sunita. And, Sanjay is a Professor of Civil Engineering at the University of California, Berkeley, and is married to Marilyn Hubbs; they have two sons: Arjun and Rajiv.

Govindjee was educated at Colonelganj High School (1943–1948), then at Kayastha Pathshala (K.P.) Intermediate College (1948–1950), and finally at Allahabad University (1950–1954), all in Allahabad, India. Several great teachers in Biology and Chemistry influenced Govindjee's academic life. Two of his college teachers (Jalpa Prasad and M.L. Gaur) were responsible for igniting his interest in both Chemistry and Biology as they would loan him their books on the subject.

Govindjee received his B.Sc. (Chemistry, Botany and Zoology, in the first division) and M.Sc. (Botany, also in the first division, and first position) from the University of Allahabad in 1952 and 1954, respectively. He specialized in Plant Physiology under the late Shri Ranjan (a former student of Frederick Frost Blackman of Cambridge, UK). Then, Govindjee served as a Lecturer in Botany (teaching Plant Physiology) at Allahabad University for two years from 1954 to 1956.

Govindjee joined the University of Illinois at Urbana-Champaign (UIUC), Illinois, USA, in 1956. He was proud to tell me that he received not only a Fulbright scholarship but also a UIUC Graduate Fellowship to work for his Ph.D. in Physico-Chemical Biology under Robert Emerson, a top authority on Photosynthesis (see above). After Emerson's untimely death in a plane crash on *February 4, 1959*, he decided to finish his Ph.D. under another highly renowned professor in Photosynthesis: Eugene Rabinowitch. In 1960, Govindjee obtained his Ph.D. in Biophysics from UIUC, with a thesis on the '*Action Spectra of the Emerson Enhancement Effect in Algae.*' (For a scientific story on Rabinowitch, see Govindjee et al., 2019a.)

From 1960 to 1961, Govindjee served as a United States Public Health (USPH) Postdoctoral Fellow at UIUC. He once mentioned to me that he considers the time he spent discussing photosynthesis research with Bessel Kok (Baltimore, MD), C. Stacy French (Stanford, CA), Louis N.M. Duysens (Leiden, The Netherlands), and William Arnold (Oak Ridge, TN), during his visits to their laboratories, as extremely valuable in his training as a biophysicist. (See Govindjee and Fork (2006) for a tribute to French; Govindjee and Pulles (2016) for a tribute to Duysens; and, Govindjee and Srivastava (2014) & Choules and Govindjee (2014) for tributes to Arnold; also, see Govindjee (2017) for a Tribute to André Jagendorf, another major scientist in photosynthesis.)

From 1961 to 1965, Govindjee served as an Assistant Professor of Botany; from 1965 to 1969 as an Associate Professor of Biophysics and Botany; and from 1969 to 1999, as a Professor of Biophysics and Plant Biology, all at UIUC. During 1998–1999, he also served as a Professor of Biochemistry. (For his early publications, see <http://www.life.illinois.edu/govindjee/pubschron.html>.)

On *August 1, 1999*, both Rajni and Govindjee opted to retire. Rajni retired as a Senior Research Biophysicist at UIUC, having worked on how bacteriorhodopsin functions in halobacteria (see Ebrey (2015) for an article honoring her on her 80th birthday). And, Govindjee became Professor Emeritus of Biochemistry, Biophysics, and Plant Biology at that time. His teaching, as well as his research, career was celebrated in October 1999, by a symposium, in his honor, at the UIUC, which was organized by C. John Whitmarsh, and where two top authorities of photosynthesis—the late Gerry (Gerald) Babcock and Bob (Robert) E. Blankenship were the key speakers.

When Govindjee Gives Wings to a 17- Year Old Boy's Dreams

Everything happens for a reason; we need to believe in ourselves. My journey was not planned; my destiny gave me this opportunity to meet Govindjee, a Guru (teacher), who inspired me to live a meaningful life, and became my *role model*.

As mentioned above, I first met Dr. Govindjee, at The National Academy of Science (NASI), Allahabad, India. This was on *February* 28, 2015, during his lecture on the “*Wonders of Photosynthesis*”. At that time, I was 17 years old and studying in the 11th class in a Hindi medium school, Shree H. L. Inter College.

Govindjee’s “Photosynthesis” lecture was unique and wonderfully presented to us all; it brought to life the detailed molecular steps of photosynthesis,

from femtoseconds (10^{-15} s) to an hour, of how plants convert light energy to make oxygen (O_2) for us to breathe with, and provide us food to live. (See his highly popular book: Rabinowitch and Govindjee (1969), which is available for free at Govindjee's website; it was heavily used by teachers and graduate students in plant biology, for almost 30 years, all around the World.)

Govindjee's lecture was presented in a 'mind-boggling' manner, where we were part of it, and felt the process as if we were doing photosynthesis! We were the molecules; two senior members of the audience were chosen, by him, to be the key reaction center chlorophyll *a* molecules (which he called Daddy or Mommy molecules), where the light energy is actually converted into chemical energy, at almost 100% efficiency – and that too within a few picoseconds (10^{-12} s). However, the maximum overall efficiency for the evolution of one oxygen molecule is only 10% (for a controversy, and stories on it, between Govindjee's professor Robert Emerson, and Emerson's professor Otto Warburg, a Nobel laureate, see Rajni Govindjee et al., 1968; Govindjee, 1999, Nickelsen and Govindjee, 2011, and Hill and Govindjee, 2014). Surprisingly, Warburg with his 25% value (a minimum of 4 photons per O_2) was wrong, and Emerson with his 10% value (a minimum of 10 photons per O_2) was right!

Govindjee shared with us the story of his experiments, on the above topics, that he had conducted in the

1970s and the 1980s (see e.g., Fenton et al., 1979; Wasielewski et al., 1989; and, reviews by Mamedov et al. (2015) and Mirkovic et al., 2017). One thing that impressed me most was his emphasis on collaborative work and in recognizing all those who worked with him (and those he has worked with!); he even included their photos – making it interesting for us (see e.g., Govindjee, 2019a).

While describing the process of oxygenic photosynthesis, he pointed out another unique thing he had discovered with his several graduate students: CO_2 (bicarbonate), in the photosynthetic system (producing glucose), is also uniquely required for electron (and proton) transfer on the electron-acceptor side of the so-called Photosystem II (PSII); see e.g. Stemler et al. (1974), Wydrzynski and Govindjee (1975), Govindjee et al. (1976), and Shevela et al. (2012). Without bicarbonate, the entire process of the electron transport process between Photosystem II and Photosystem I (PSI) comes to a halt! This is one of his major discoveries.

The manner he described, again using us the audience, as to how the PSII and the PSI function in series (the so-called “Z” scheme) in transferring electrons from water molecules to CO_2 to give us O_2 and sugars (see Govindjee et al., 2017; Jaiswal et al., 2017; Mohapatra and Singh, 2015) was exciting. No wonder, Govindjee has been aptly called “Mister Photosynthesis”, a title once used for the 1961 Nobel laureate Melvin Calvin, co-discoverer of the carbon

cycle (the so-called Calvin-Benson cycle; for a scientific story on Calvin, see Govindjee et al., 2020).

In short, I found Govindjee to be a very inspiring speaker, and even more, an inspiring human being since he included, in his talk, how he achieved his dreams, and the praise he gave to his teachers who guided him – both in India and in the USA (see Govindjee, 2019b, for a list of those he has thanked).

What was of more significant challenge (and excitement) to us all – was when he ended his lecture by telling us what is being done around the World (including Urbana, Illinois; Berkeley, California; Tempe, Arizona; New Delhi, India) to improve “photosynthesis” to make more “biomass”, and new chemicals (including plastics), needed for our life. And, he is making his contributions in this direction by collaborating with Profs. Ashwani Pareek and Baishnab Tripathy (of JNU, New Delhi, India; see papers by Kandoi et al., 2016; Soda et al., 2018; Wungrampha et al., 2019) and with Prof. Xin-Guang Zhu (of the Chinese Academy of Science in Shanghai, China; see, e.g., Hamdani et al., 2015; 2019).

Today, genetic engineering is a crucial thing for success! Govindjee said that this milestone research (and innovations still to come) is indeed going to be of great benefit to us all now, and in the future – not only through improved agriculture but also through *artificial photosynthesis*! For this, he has interacted with Prof. Mahdi Najafpour; see e.g., Najafpour

et al. 2013a; 2013b. I wish to add that currently, he has recognized the importance of *mathematical modeling* for the various steps as well as for the overall process of photosynthesis (see, e.g., Fu et al., 2019; and, Stirbet et al., 2019a).

The little time that I have spent with Govindjee has been very precious for me; it has changed my life and my way of thinking. It was a turning point for my personal and professional life. Words are not enough to express my heartfelt gratitude for such an amazing and inspiring Guru (teacher) and a *role model*.

When Distances do not Matter
- Communication is Through
E-Mail

After ten days of meeting Govindjee, in 2015, there was a festival of colors, the *Holi*. So, on March 7, I sent him an e-mail wishing him a “Happy Holi” and reminded him of our meeting. The way of writing my e-mail, to him, was informal; this is because I had never sent an e-mail to anyone, and also, I was not good at English. But his reply was full of kindness and inspiration.

I wrote:

Hello Govindgee <A Holi wishes in Hindi>

I'm Virendra from Mathura... I want to talk to you on mobile. Please call me...

Govindgee 86506XXXX4... Mai Virendra jo apse 'nasi' Allahabad mai

Mila tha 28 Feb. Ko. You are great to me...

Dr. Govindjee replied:

Dear Virendra

Thank you much for remembering me. I do appreciate your Holi greetings.

Please tell me more about yourself. Best wishes to you in everything you do.

Sincerely, Govindjee

Through e-mails, I was in touch with him for more than two years. During this time, Govindjee encouraged me to learn English. He sent me many English language books to read. In addition, he helped me financially from USA.

I started to work hard and dreamed about my upcoming future. At every stage of my studies and achievement, I sent an e-mail to Govindjee although it was not easy for me since whenever I sent an e-mail, I made many mistakes in spellings and sometimes in grammar.

But, Govindjee always appreciated me and asked me to write an email daily to him. Whenever I sent an email to him, he would correct my text and send it back to me so that I could learn from my mistakes. He also shared many of his published research papers, and photographs with me; in this way, he wanted to motivate me for a successful future. Thus, I learned a lot from Govindjee.

After two years, being in touch with him, a day came when I met him again, on October 22, 2017 (2 days before his 85th birthday) at the Aravali Guest House, on the JNU (Jawaharlal Nehru University) Campus (see above). At this time, he discussed with me, in general terms, his then recently published research papers and the draft of the book he was writing (see Shevela et al., 2019).

And, then, he encouraged me to work on my English again; he also asked me about my family, studies and my plans for my upcoming future. We (Govindjee,

Rajni and I) all visited JNU Campus and had lunch together. After this meeting, when I was leaving Delhi for Mathura (my hometown), Govindjee said- “Thank you, Virendra” and gave me one thousand rupees. I said – no sir, but with a beautiful smile, he said, “Virendra, you are like my grandson. Please take this money.”

This was a wonderful meeting with Govindjee and his wife Rajni. I found that though he lives in the USA, his heart is purely Indian. Govindjee believes in simplicity and is in love with *nature*.

Govindjee's Remark on the Natural Beauty at the JNU Campus

“I love to be at JNU because of the natural environment and because of the dedicated, hardworking and friendly graduate students and faculty members. The songs and the calling of the peacocks and the beautiful birds make it a heavenly place to visit and teach excellent students the science and the future of photosynthesis research for the benefit of India.”

This was my second meeting when I was a first-year engineering student. He asked me about my studies again and told me about the online resources, from where I could study. I remember one of them was the “*Khan Academy*.” (See: <https://www.khanacademy.org/>.)

Once again, in 2019, I met Govindjee and his wonderful wife Rajni – around 11 PM – again at the JNU Campus when he was leaving the Aravali Guest House for Indira Gandhi Airport.

Yes, it was a brief meeting, but it was unforgettable for me.

After this late-night meeting, Govindjee sent me an e-mail when he was at the Amsterdam Airport and wrote: “*Dear Virendra: It was a pleasure to meet you. I am sorry I could not spend more time with you.*”

This e-mail shows how humble and kind he is, and words are not enough to express my gratitude for such an amazing and inspiring Guru (teacher) and a Role Model. Govindjee is a person who is not only a great scientist but a great Indian and great role model. Whatever I am today, it is mainly because of his kind guidance and blessings.

A glimpse of what others have said on Govindjee is included in citations in **Appendix 1**; it includes a list of web sites as well papers by others. On the other hand, a few selected publications (other than those cited under References) from the time I met him in 2015, are in **Appendix 2**; it all reflects on his

dedication, his international connections, and his enormous contributions, even when he is 87 years old!

Additional photographs are available in “Supplementary Material” to this Tribute.

(See: <http://digitalmazdoor.in/photographs.html>)

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(Here, “G.” has been added as Govindjee’s initial in all his papers since that is his official name now.)

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Wydrzynski, T. and Govindjee, G. (1975) A new site of bicarbonate effect in Photosystem II of photosynthesis: Evidence from chlorophyll fluorescence transients in spinach chloroplasts. Biochimica et Biophysica Acta **387**: 403-408.

Appendix 1

Some useful websites and a list of a few articles on or about Govindjee

Annual Reviews, Inc. Conversations: An Interview of Govindjee by Don Ort: <https://www.youtube.com/watch?v=cOzuLovxEio>

Eaton-Rye, J.J. (2007a) Celebrating Govindjee's 50 years in photosynthesis research and his 75th birthday. *Photosynthesis Research* **93**: 1-5.

Eaton-Rye, J.J. (2007b) Snapshots of the Govindjee lab from the late 1960s to the late 1990s. and beyond.... *Photosynthesis Research* **94**:153-178.

Eaton-Rye, J.J. (2013) Govindjee at 80: more than 50 years of free energy for photosynthesis.

Photosynthesis Research **116**:111–144.

Eaton-Rye, J.J. (2018a) Govindjee – a lifetime in photosynthesis. *Photosynthesis Research* **122**:121–158.

Eaton-Rye, J.J. (2018b) Foreword to a special issue, celebrating Govindjee's 85th birthday. *Photosynthetica* **56**:1–10.

Jain, K. (2019) Govindjee: The one who revealed the secrets of photosynthesis. (**In Hindi**). Science India, June 2019, pp. 14–24.

Jajoo, A., Guruprasad, K.N., Bharti, S. and Mohanty, P. (2009) International conference

“Photosynthesis in the Global Perspective” held in honor of Govindjee, November 27–29, 2008, Indore, India. *Photosynthesis Research* **100**: 49–55.

Prasil, O. (2014) Govindjee, an institution, at his 80th (really 81st) birthday in Trebon in October, 2013: a pictorial essay. *Photosynthesis Research* **122**:113–119.

Rajya Sabha (Upper House of India) TV Eureka: A presentation and an Interview with Govindjee

<https://www.youtube.com/watch?v=OBKusHc-jMzw>

Sen, A. (2019) Govindjee, a pioneer in Photosynthesis
<<https://mcb.illinois.edu/news/article/512/>>

Sharma, R. (2015) Govindjee- The Living Legend I Met.<https://www.linkedin.com/pulse/govindjee-living-legend-i-met-dr-ravi-sharma>?

Sharma, R. (2016) Govindjee and Rajni Govindjee – Confluence of Photosynthesis and Photobiology. <https://www.linkedin.com/pulse/govind_jee-rajni-confluence-photosynthesis-dr-ravi-sharma>

UIUC News article, 2009: An absorbing interest (of) Govindjee:
<<https://las.illinois.edu/news/2009-10-01/absorbing-interest>>

Wikipedia:<<https://en.wikipedia.org/wiki/Govindjee>>

Yates, D. (2019) Govindjee's photosynthesis museum
<<https://news.illinois.edu/view/6367/801235>>

Appendix 2

Selected list of just a few publications of Govindjee and coworkers, since 2015 to give a glimpse of his international collaboration

China

Hu K, Govindjee G, Tan J, Xia Q, Dai Z and Guo Y (2020) Co-author and co-cited reference network analysis for chlorophyll fluorescence research from 1991 to 2018. *Photosynthetica* 58: article #2279. (15 pages); in the press.

Czech Republic

Kaňa, R. and Govindjee, G. (2016) Role of Ions in the Regulation of Light Harvesting. *Frontiers in Plant*

ScienceVol. 7: article #1849 (17 pages) DOI 10.3389/fpls.2016.01849.

Mishra, K.B., Mishra, A., Kubásek, J., Urban, O., Heyer, A.G. and Govindjee, G. (2019) Low temperature induced modulation of photosynthetic induction in non-acclimated and cold-acclimated *Arabidopsis thaliana*: chlorophyll *a* fluorescence and gas-exchange measurements. *Photosynthesis Research* 139: 123-143. DOI 10.1007/s11120-018-0588-7.

India

Kodru, S., Malavath, T., Devadasu, E., Nellaepalli, S., Stirbet, A., Subramanyam, R. and Govindjee, G. (2015) The slow S to M rise of chlorophyll *a* fluorescence induction reflects transition from state 2 to state 1 in the green alga *Chlamydomonas reinhardtii*. *Photosynthesis Research* 125:219-231; DOI 10.1007/s11120-015-0084-2n.

Shabnam, N., Sharmila, P., Govindjee, G., Kim, H. and Pardha-Saradhi, P. (2017) Differential response of floating and submerged leaves of longleaf pondweed to silver ions. *Frontiers in Plant Science*, Vol. 8, article # 1052 (13 pages). DOI 10.3389/fpls.2017.01052 (13 pages).

Mexico

Jimenez-Francisco, B., Stirbet, A., Aguado-Santacruz, G.A., Campos H., Conde-Martinez, F.V., Padilla-Chacon, D., Trejo, C., Bernacchi, C.J. and Govindjee, G. (2019) A comparative chlorophyll *a* fluorescence study on isolated cells and intact leaves of *Bouteloua gracilis* (blue grama grass). *Photosynthetica* **57** (S1): 77-89. DOI 10.32615/ps.2019.148.

Sweden

Bjorn, L.O. and Govindjee, G. (2015) The Evolution of Photosynthesis and its Environmental Impact. In L.O. Björn (Ed.), *Photobiology: The Science of Light and Life*; DOI 10.1007/978-1-4939-1468-5_16, Springer Science+Business Media, New York, 25 pages.

USA

Negi, S., Perrine, Z., Friedland, N., Kumar, A., Tokutsu, R., Minagawa, J., Berg, R., Barry, A., Govindjee, G. and Sayre, R. (2020) Light-regulation of light harvesting antenna size substantially enhances photosynthetic efficiency and biomass yield in green algae. *The Plant Journal: TPJ*- 01547-2019.R1. in the press

About The Author



Virendra Kumar, who is a trained Engineer, was born, in 1998, in Mathura, Uttar Pradesh, India. He has six members in his family. His father Mr. Pohap Singh is a plumber, and his mother, Mrs. Sukh Devi, is a housewife. Virendra did his high school (2013-2014) from Dr. Panni Lal Higher Secondary School, then his Intermediate (2015–2016) from Shree H. L. Inter College and finally his Engineering Degree (2016-

2020) from the G. L. Bajaj Group of Institutions, all at Mathura, Uttar Pradesh, India.

In 2013, Virendra Kumar received a special award from Mathura's chairperson Mrs. Manisha Gupta for his excellent social service work. Then, in 2015, he was selected, from Mathura, in a science contest for *storytelling*, by the National Academy of Science (NASI), Allahabad, India, where he met Govindjee.

In 2016 and 2017, *Dainik Jagran* (a newspaper) published several articles on his social service to others. In 2017, he started his journey as an entrepreneur by developing a website for daily wage workers, namely "*Digital Mazdoor*," a unique innovation for the welfare of these workers. For this, Virendra Kumar was recognized, in 2018, by a special award from Dr. A.P.J. Abdul Kalam Technical University, and the Dr. Kalam Centre. Further, he was also recognized by *Niti Ayog* (National Institute for Transforming India) as well as *Doordarshan* (of Broadcasting Ministry of India).

In 2019, Virendra Kumar secured the first position in Kalam Annual Project Summit – KappTeC-2019 for application Prototype, organized by Dr. A P J Abdul Kalam Technical University, and won a cash prize of Rs 20,000. For his innovation, he has received a grant of Rs 50,000 from the Government of Gujarat with the help of the *I-Create* Foundation; he was also a winner in *Dainik Jagran Startup City Pitch*. He has received, for entrepreneurship, an award from

the Regional Science & Technology Centre, Agra, Uttar Pradesh. Now, he plans to start his career in the corporate sector as a Software Engineer.

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“Wings to a Child’s Dreams; A Tribute to Govindjee, is the first publication by Virendra Kumar, and it is wonderfully written, with a heart-wrenching, engaging plot and endearing characters. I congratulate Virendra, and wish him the very best for his future endeavors”

- Prabhat Kumar Singh
(Assistant Labour Commissioner(A.L.C), Mathura)

“Wings to a Child’s Dreams; A Tribute to Govindjee, is the first book I’ve read by Virendra Kumar, but, I believe that it won’t be my last for sure—definitely another author has been added to my favourites. Best wishes to Virendra”

- Priyanshu Shukla
(Software Engineer, Tata Consultancy Services(TCS) LTD)

“This Tribute is a beautiful story which touches my heart and I am sure it will touch your heart in all the right places. “Wings to a Child’s Dreams” is the first book I’ve read from Virendra Kumar, and I wasn’t disappointed. Virendra is going good towards his bright future. Good luck! ”

- Dr. Lalit Kumar Tyagi
(Director, G L Bajaj Group of Institutions, Mathura)

