

Wings of Fire-

Dr. Avul Pakir Jainulabdeen Abdul Kalam. (A. P. J. Abdul Kalam)

Wings of Fire is an autobiographical work written by Dr. A.P.J. Abdul Kalam. Dr. Kalam reflects on his journey, beginning with his upbringing in Rameswaram, a small town in Tamil Nadu, until his rise to prominence in both politics and science. The book offers valuable insights into how education, determination, and innovation can transform one's life.

Wings of Fire is a testament to a man's persistent spirit who dreamt big and inspired millions with his vision for a better tomorrow. The first three chapters of Wings of Fire offer a captivating narrative of Dr. A.P.J. Abdul Kalam's formative years. Through vivid anecdotes and poignant reflections, Kalam portrays the influences of his upbringing, the guidance of mentors, and the pursuit of knowledge that shaped his character and fuelled his ambitions. From the religious harmony of his hometown to the transformative teachings of his teachers, each chapter reveals the resilience and determination that drove Dr. Kalam forward.

Wings of Fire is more than just a memoir; it is a testament to the power of education, perseverance, and faith in oneself. Dr. Kalam's story serves as an inspiration to countless individuals.

Chapter One details Dr. A.P.J. Abdul Kalam's upbringing in Rameswaram, the influence of his parents, the religious and cultural harmony of his community, and the significant events that happened during his childhood. Kalam recalls his father's daily rituals, a tragic cyclone incident, his friendship with Ahmed Jallaluddin, and the scarcity of books in his hometown. He also mentions his cousin Samsuddin's role in distributing newspapers and his interactions with childhood friends from different religious backgrounds.

Dr. Kalam's educational experience at Schwartz High School, St. Joseph's College, and MIT is detailed in chapter Two. He reflects on the practical lessons learned while assisting his brother and acknowledges the financial sacrifices made by his family especially his sister Zohra. Kalam's interest in aeronautical engineering blossoms at MIT. His training at HAL gives him hands-on experience, and he has been offered job positions by both the Air Force and the Ministry of Defence.

Chapter Three of Wings of Fire delves into Dr. Kalam's scientific career, offering a detailed account of his involvement in missile development following obstacles in joining the Indian Air Force. Seeking solace at the Sivananda Ashram, he gains a profound perspective on his life's purpose. Joining the Directorate of Technical Development and Production (DTD&P), Kalam embarks on various design projects before leading a team to develop a hovercraft prototype. Despite facing challenges and opposition, Kalam's unwavering determination leads to success. His transition to a role as a rocket engineer at INCOSPAR marks the inception of his remarkable journey in space exploration.

Chapter One

In the first chapter, Kalam gives a detailed account of his early life and upbringing in Rameswaram. His parents, Jainulabdeen and Ashiamma, played pivotal roles in shaping his character and values. He describes himself as a short boy with rather undistinguished looks, born to tall and handsome parents. Kalam reflects on the religious and cultural harmony that existed in Rameswaram. Despite being a predominantly Muslim locality, Rameswaram was home to the famous Shiva temple, a sacred pilgrimage site for Hindus.

Kalam fondly recalls accompanying his father to the mosque in their neighbourhood for evening prayers. He highlights the close friendship between his father and Pakshi Lakshmana Sastry, the high priest of the Rameswaram temple. He describes how his father would start his day at 4 a.m. with the ritual of reading the namaz (Islamic prayers) before dawn. Following the prayers, his father would walk four miles to a small coconut grove owned by their family. This daily routine of hard work and devotion persisted even into his father's later years, serving as a source of inspiration for Kalam.

Kalam narrates about an important project undertaken by his father when he was six years old—the construction of a wooden sailboat to transport pilgrims from Rameswaram to Dhanuskodi. However, tragedy struck when a cyclone with winds exceeding 100 miles per hour swept away their boat and caused damage to the surrounding area, including the collapse of the Pamban Bridge.

Kalam talks about his friendship with Ahmed Jallaluddin, who was about 15 years older than Kalam. Jallaluddin became a close friend and mentor to him, often referring to Kalam affectionately as "Azad." Kalam admires Jallaluddin's wisdom and humility. He reflects on the scarcity of books during his childhood in Rameswaram. Despite the lack of access to reading materials in his local community, he found solace and opportunity through the personal library of STR Manickam, a former revolutionary or militant nationalist.

Dr. Abdul Kalam also recalls the influence of his first cousin, Samsuddin, during his boyhood in Rameswaram. Samsuddin served as the sole distributor for newspapers in the town, catering to the reading needs of the literate population. Newspapers arrived at the Rameswaram station via the morning train from Pamban, and Samsuddin played a crucial role in distributing them to the residents. Dinamani was the most sought-after newspaper in their locality.

During the outbreak of the Second World War in 1939, Kalam, at the age of eight, found an unexpected demand for tamarind seeds in the market. He began collecting and selling these seeds to a provision shop on Mosque Street, earning a modest income of one anna per day. During World War II, although Rameswaram wasn't affected, India got involved, causing an emergency. Trains did not stop at Rameswaram. Papers were thrown from moving trains. Kalam helped his cousin Samsuddin catch them, earning his first wages. This made him really proud, even years later.

Kalam recalls his three childhood friends—Ramanadha Sastry, Aravindan, and Sivaprakasan, who were all from orthodox Hindu Brahmin families. Despite their religious differences, they shared a strong bond and never felt any disparity among themselves.

In his childhood in Rameswaram, Abdul Kalam faced social prejudice due to religious differences but was supported by his father and his science teacher, Sivasubramania Iyer, who advocated for social equality. As Kalam grew older, he sought educational opportunities in Ramanathapuram but struggled with homesickness, missing the familiar comforts of Rameswaram. However, driven by his father's dreams and guided by the wisdom of his mentors, Kalam embraced his new environment, determined to succeed. Throughout his journey, he held onto the lessons of positive thinking and perseverance instilled by his friend Jallaluddin.

Chapter Two

In the second chapter, Kalam narrates his experiences at Schwartz High School, Ramanathapuram, St. Joseph College, Trichy, MIT (Madras Institute of Technology), and his experiences as a trainee at Hindustan Aeronautics Limited (HAL).

Dr. Kalam's teacher, Iyadurai Solomon at Schwartz High School, Ramanathapuram, played a significant role in shaping his character and dreams. Solomon emphasized the importance of desire, belief, and expectation in achieving success. His influence helped Kalam overcome his humble beginnings and believe in his ability to achieve greatness. Through his encouragement, Kalam nurtured his childhood fascination with flight and eventually became the first child from Rameswaram to fly. His teaching not only raised Kalam's self-esteem but also instilled in him the belief that with faith, one can change their destiny.

After completing his education at Schwartz High School, Kalam pursued higher education at St. Joseph's College, Trichy. He admits he wasn't an outstanding student academically, but his practical mindset helped him succeed in his studies. During his visits back home, Kalam assisted his elder brother Mustafa Kamal at his provision store, gaining practical experience in business and commerce.

Dr. Kalam reminisces about the positive influence of his teacher, Reverend Father T.N. Sequeira at St. Joseph's College. Father Sequeira not only taught English but also served as the hostel warden. He exhibited considerate behaviour by addressing even the smallest needs of his students, such as providing gingelly oil for the ritual bath on Deepavali. Kalam fondly recalls the friendship with his hostel mates, including an Iyengar from Srirangam and a Syrian Christian from Kerala, with whom he shared a room.

During his tenure as secretary of the vegetarian mess, Kalam and his roommates hosted Reverend Father Kalathil, the Rector, for lunch, preparing a menu that reflected their diverse cultural backgrounds. Despite any expectations, Reverend Father Kalathil praised their efforts warmly, making the occasion memorable for everyone involved.

Kalam also pays tribute to his mathematics teachers, Professors Thothathri Iyengar and Suryanarayana Sastry, who exemplified the teachings of Kanchi Paramacharya by promoting the joy of giving.

During his final year at St. Joseph's College, Kalam develops a passion for English literature and delves into classic works by authors like Tolstoy, Scott, and Hardy. Additionally, his fascination with subatomic physics is ignited by his teachers at St. Joseph's, who introduce him to the concepts of half-life and radioactive decay. He also mentions the financial struggles he faces and the sacrifices made by his family, particularly his sister who mortgaged her gold bangles to support his education.

At MIT, Kalam is drawn to aeronautical engineering, inspired by the sight of decommissioned aircraft on campus. He talks about the pivotal role played by three influential teachers during his time at the Madras Institute of Technology (MIT).

Prof. Sponder teaches technical aerodynamics and inspires Kalam with his practical experience and unwavering professionalism despite personal challenges. Prof. K.A.V. Pandalai introduces Kalam to aero-structure design and analysis. He fondly remembers Prof. Pandalai as a cheerful and enthusiastic teacher who made complex subjects accessible. Prof. Narasingha Rao, a mathematician, teaches theoretical aerodynamics and ignites Kalam's passion for mathematical physics.

After completing his education at the Madras Institute of Technology (MIT), Dr. A.P.J. Abdul Kalam went for a training program at Hindustan Aeronautics Limited (HAL) in Bangalore. There, he gained hands-on experience working on aircraft engine overhauling as part of a team. This practical experience deepened his understanding of the principles learned in the classroom, creating a sense of excitement akin to meeting an old friend unexpectedly. Upon completing his training at HAL, Kalam had two job opportunities aligned with his dream of flying: a career in the Air Force or a position at the Directorate of Technical Development

and Production (DTD&P) at the Ministry of Defence. He applied for both and received interview calls from both places simultaneously.

Chapter Three

In the third chapter of Wings of Fire, Dr. A.P.J. Abdul Kalam recounts his experiences working as a scientist at the Directorate of Technical Development and Production (DTD&P) and his involvement in India's missile development program. Dr. Kalam appears for interviews at the Directorate of Technical Development and Production (DTD&P) in Delhi, and the Air Force Selection Board in Dehradun. He is ranked ninth out of twenty-five candidates in the selection process for the Air Force. After the interview, he treks down to Rishikesh.

Seeking solace and guidance at the Sivananda Ashram after facing disappointment in his attempt to join the Indian Air Force, Dr. Kalam meets Swami Sivananda, whose serene presence and profound wisdom offer comfort. Swami Sivananda advises Kalam to embrace his destiny and trust in the greater purpose of his life. This meeting marks a turning point for Kalam, as he learns to surrender to the will of God and search for the true purpose of his existence.

Kalam is posted as the Senior Scientific Assistant in DTD&P (Air). In 1958, he began his work at the Technical Centre (Civil Aviation), where he undertook design assignments and gained practical experience in aircraft maintenance. He also spends time at the Aircraft and Armament Testing Unit (A&ATU) in Kanpur, participating in the evaluation of aircraft performance. He feels lonely amidst the crowds and noise of the bustling and industrial environment of Kanpur, a stark contrast to the serene familiarity of his hometown, Rameswaram.

Kalam is included in the design team for a DART target project at DTD&P (Air). He successfully completes this task along with other team members and subsequently undertakes preliminary design studies on a Human Centrifuge and a Vertical Take-off and Landing Platform. He also contributes to the development and construction of the Hot Cockpit.

After three years, he was posted to the newly established Aeronautical Development Establishment (ADE) in Bangalore.

Kalam later leads a small project team tasked with designing and developing an indigenous hovercraft prototype known as a Ground Equipment Machine (GEM). He and his team embark on the ambitious project with determination and ingenuity, seeing it as an opportunity for growth and innovation, drawing inspiration from the Wright Brothers' perseverance in building the first airplane.

During VK Krishna Menon's tenure as Defence Minister, he closely monitored the progress of Dr. Kalam's project, envisioning it as the beginning of India's indigenous defence equipment development. His confidence in their abilities boosts the team's enthusiasm. However, Dr. Kalam faces criticism from senior colleagues who view their efforts as eccentric and impractical. Despite the weight of opposition, Dr. Kalam remains optimistic and determined to prove their detractors wrong, drawing parallels to the scepticism faced by the Wright Brothers in their pursuit of flight.

During Defence Minister Krishna Menon's visit to ADE, Kalam presents the progress of the GEM project, presenting the prototype named Nandi, after Lord Shiva's bull. Despite concerns about safety, Menon expresses confidence in Dr. Kalam's abilities and insists on flying in the Nandi himself. Despite offers from experienced pilots to take control, Kalam remains steadfast in his competence and successfully pilots the hovercraft.

Kalam's team successfully completes the hovercraft project ahead of schedule, achieving a working prototype capable of carrying a significant load on an air cushion. Despite initial enthusiasm from Defence Minister Krishna Menon, the

project faces opposition and controversies in the changing political landscape, leading to its eventual shelving. Kalam grapples with disillusionment and disappointment, feeling that the limits of possibility are closer than he once believed. However, a glimmer of hope emerges when Dr. Mediratta unexpectedly arranges a demonstration for Prof. MGK Menon, who expresses genuine interest in the hovercraft project, sparking renewed optimism within the team.

After a memorable hovercraft ride with Prof. MGK Menon, Kalam receives an unexpected call from INCOSPAR for an interview as a Rocket Engineer. Interviewed by Dr. Vikram Sarabhai, Prof. MGK Menon, and Mr. Saraf, Dr. Kalam feels welcomed and respected. The interview becomes a transformative moment, symbolizing the alignment of Dr. Kalam's personal dreams with a larger vision for the nation's space research.

Kalam receives the breakthrough opportunity of becoming a rocket engineer at INCOSPAR, marking the beginning of his impactful journey. His work environment at INCOSPAR contrasts significantly with his previous experiences, emphasizing collaboration and mutual respect. The establishment of the Equatorial Rocket Launching Station at Thumba in Kerala marks the inception of modern rocket-based research in India, with Kalam playing a pivotal role.