



Subramanyam



ANANT H. PANDYA

(1909-1951)

Elected F.N.I. 1949

DR. ANANT H. PANDYA, pre-eminent engineer, educator and public servant, was a pioneer of India's industrial and technical future. A tragic accident cut his life short before his forty-second birthday, but he had used those few years so wisely and so well that his life remains an inspiration to all of us and a model for the young engineers and scientists so central to all that India is to be.

Early Life

Anant was born on July 11, 1909, at the Pandya family bungalow at Bhavnagar, Saurashtra in Gujarat. He was the second child and the first son of his parents' eleven children. His mother, Puriben, lived a life devoted to making everyone happy in the joint family. His father, Hiralal H. Pandya, was absent for several years of Anant's childhood, completing his education in the United States. Afterwards, Hiralal was employed as an agricultural engineer by several of the princely States. Anant grew up in Bhavnagar under his grandfather's care and guidance.

Anant's grandfather, Hargovind Pandya, was a railway station master, but his primary interest was education, and he helped to found a center of new and nationalist education, the Dakshinamurti Vidyarthi Bhavan. From early childhood Anant arose with Hargovind at 5 A.M. and followed him through his regimen of hymns and prayers, exercise and cold bath. Before school began, Anant was already learning the epics of *Ramayana* and *Mahabharata* and playing with blocks and other toys sent by his father, showing the technological wonders of the United States. His education at the Dakshinamurti Vidyarthi Bhavan emphasized character development. The students were deeply imbued with Indian music, art and culture, taught science first-hand in the surrounding fields and hills, and introduced to each important person who passed through Bhavnagar. In this way, Anant served as a volunteer in Mahatma Gandhi's camp, talked with Rabindranath Tagore, studied physical culture with the revolutionary Prithvisingh, and heard the music of many of India's foremost musicians. Creativity and individual thinking, patriotism and national feelings were emphasized and Anant became the school's best student and a capable artist.

As an adolescent, Anant and his cousin, and companion through all his



youth, Upendra Bhatt, started a hand-written monthly literary magazine, "*Kumar*". Anant did its illustrations and won prizes for several of his paintings and drawings. In later years, noted artist, Ravishanker Raval, was to make "*Kumar*" an outstanding periodical for the youth of Gujarat.

At fifteen, when Anant and Upendra completed secondary school, they faced a difficult decision. Upendra relates:

"If we wanted to pursue the study of literature, economics and social sciences or wanted to join the upsurge of nationalism, the way was clear to Mahatma Gandhi's Gujarat Vidyapith. If, however, we wanted to pursue science or engineering, there was no other go, but to pass Matriculation of the Government sponsored University. It was considered a sin to go to a Government school in those days of patriotism and national fight against foreign rule. On the other hand, we felt that science and engineering were inevitable for national reconstruction. Our trusted teachers analysed the question as self-aggrandizement (Govt. school of engineering) versus renunciation (Gujarat Vidyapith). Certain desires, ambitions and attitudes led us to the path of science."

Education

They passed Matriculation from Bombay University, studied for a year at Samaldas College in Bhavnagar and, then, in June 1926, entered Gujarat College, Ahmedabad, for the study of science. Besides being the Capital of Gujarat and a centre of culture, Ahmedabad was Mahatma Gandhi's residence and the seat of his Gujarat Vidyapith. Anant and Upendra were associated with many of the Vidyapith's activity and often stayed overnight there so as to attend Gandhi's early morning prayers. They also often met with Ravhishankar Raval and others at the offices of "*Kumar*". They continued their early morning schedule at Gujarat College and did most of their homework from 7-10 A.M. They also participated in College sports, science exhibitions and military training. Anant passed Inter-Science in 1927 and joined the Engineering College in Karachi.

In Karachi, Anant, and his cousins Upendra Bhatt and Ramesh Mehta, studied under Principal Gokhale and Professor Junnarkar. Their daily program was vigorous but proved itself by their academic records. They arose daily at 3.15 A.M., studied until 7.30, exercised for 30 minutes, had their baths and did their laundry, read again between 9-9.30 and, then, rested until they left for the college at 10 A.M. In the evenings, they usually took long walks. This schedule continued even during vacations. They furthered their activities in support of nationalist movement by establishing the First Congress Youth League, negotiating with the College a day monthly for closing the college to protest Gandhi's imprisonment, leading efforts at group spinning, and fasting to save money for flood victims. Anant's academic record was unparalleled. He was first class first for the entire University for all the three of his years in Karachi Engineering College



won several scholarships and gold medals including the coveted James Berkeley Gold Medal. Opportunities were open to him in the Indian Services of Engineers and as a scholarship student in the best British Universities, but he had nationalistic objections to both and chose to attend the world-renowned Massachusetts Institute of Technology in the U.S.A.

M.I.T. provided full scope to his engineering attitude and intellect. The characteristic training at the Institute emphasized the development of rational analysis, experimental proof and independent judgment. Anant excelled in all these and secured extra-ordinary marks in the subjects he selected and won the affection and regard of his professors, including President Compton. He enhanced the prestige of Indian students and his attainments served as a beacon light to those who followed. By taking extra assignments during the summer of 1931, he qualified for the degree of Master of Science in Civil Engineering within one year. In his second year, Upendra and Ramesh joined him at M.I.T. They continued their early morning exercise and evening walks, learned more about western classical music and travelled in the United States. Upendra Bhatt relates:

“The American way of life demonstrated to us the ideal of individual liberty and democratic social order. We, students, formed the Hindustan Association and expressed our national aspirations. We realized that America’s wealth and strength consisted in development of the country’s resources through Technology, and we also dreamt and planned the development of India on the same lines.”

Anant secured the Austin Research Fellowship to conduct research in Soil Mechanics and within a period of a year and a half completed his Thesis on “*The Design and Construction of Ports and Harbours*”, and also another work on “*Large Dams*”. By August, 1932, he had already been elected a Member of the American Society of Civil Engineers. In 1933, he was one of the first and youngest to receive the Doctorate of Science in Engineering. Many of his professors considered Anant the finest student of their entire career. In three years he had completed all his graduate training and finished his doctorate with the highest distinction, even being elected an Honorary Fellow of the Institute.

Outstanding Career

He returned to India at the depth of a period of economic depression (late 1933), when American degrees were still ‘unrecognised’ by the British controlled and influenced economy. He looked hard for a job and ended up with a junior design post in the Mckenzie Ltd., of Bombay, where he worked for over a year. The job allowed him little scope and a most modest salary of Rs. 250/- per month, and he saw no opportunities elsewhere in India; so he left for London in the Autumn of 1935. There, within a fortnight, he was hired for a major post by the large international firm of Trussed Con-



crete Steel Co. Ltd. Ironically, in early 1936, he was sent by this firm back to India to advise the very Indian engineering firm M/s. Hindustan Construction Engg. Co. Ltd., which had refused to hire him (because of his American qualifications) in the design of earthquake proof buildings at disaster-struck Quetta.

During his brief visit to India, Anant married Shrimati Lilyben Shah and both of them returned together to London. While in London, he was responsible for the development of new forms of design and construction in steel and reinforced concrete and for research in welded structures. In November, 1937, in appreciation of his great ability he was elevated to the important position of Chief Engineer of Diagrid Structures Ltd., a subsidiary of Trussed Concrete. In September 1938, he was awarded the James F. Lincoln Arc Welding Foundation International Prize of \$32,000 for a paper on "*The Arc-welded Grid Applied to Plane and Spatial Structures*", written in collaboration with his assistant, Mr. R. J. Fowler. During this period, Anant contributed several articles to Technical journals and lectured on engineering subjects at various places in England. He was a member of many engineering institutions and societies. He made a special study of Structural Air Raid Precautions in England and prepared his own design for a reinforced concrete shelter. This work received praise and appreciation from the British Government and also received a merit prize for it. In 1939, he took out British Patent 512867 (also later patented elsewhere) on his process for "*Continuous Cranked Beam Construction*". His superior at Trussed Concrete, E. R. Hole, remarks:

"Many contracts involving engineering design of a high standard in both concrete and welded steel stand to the credit of Dr. Pandya both in Britain and overseas, and they range over almost the complete scope of industrial, public and domestic building, including aircraft hangers and large factories."

All these activities spotlighted Dr. Pandya's great calibre as a Civil Engineer and won him international renown.

Anant's and Lily's life in London was simple and joyful. Lily pursued graduate studies in Science, particularly Botany. Their modest flat was a centre and home for much of the Indian community in England. The Government officials and Maharajahs joined young students in discussing their hopes and dreams of India's future. The Pandyas wanted to return to India, and just before the beginning of the Second World War, the Bengal Engineering College at Sibpur was seeking a new Principal. The post had always been held by an Englishman and, thus, the advertisement for it came in the London papers only. Anant applied and was recommended by the English Committee. The Government of Bengal hesitated to accept the recommendation and referred the matter back to London, but, again, the Committee recommended Dr. Pandya, and in September 1939, he was appointed as its first Indian Principal. They rushed to leave London before



the war began, and theirs was one of the last ships to leave for India. Most of their baggage went to a watery grave aboard a following vessel, sunk by German submarines.

Dr. Anant Pandya was only thirty when he took over Bengal Engineering College, but, within a short time, he impressed every one as an excellent teacher and a capable administrator. With his sound judgement and extremely amiable character, he instantly won the affection and esteem alike of his colleagues and his students. In addition to his duties as Head of the Engineering College, he distinguished himself as a member of the Senate and Syndicate of the University of Calcutta, a faculty member there and at Rajputana University, an advisor to Benaras Hindu University and a Member of the Central Advisory Board of Education and numerous other special Committees of Education for both the Central and Bengal Governments. Dr. S. R. Sen Gupta, a Faculty colleague and later Director of I.I.T., Kharagpur, remarks:

“The large body of students and staff of Bengal Engineering College became known to Dr. Pandya personally and unhesitatingly began to approach him for the solution of their personal problems, for advice and guidance. He was kind and courteous to all concerned, students and staff, from the poorest paid employee to the seniormost Professor. He extended the same kindly courtesy to everyone with his winning smile—.”

“After the outbreak of the war, Dr. Pandya was one of the first to realise that it would be essential to extend the technical training facilities for the training of craftsmen, and I know personally that he took the initiative in writing to all the important Government officers and placing the facilities of College at their disposal—. He has done more for this college than anyone else before or after him.”

In April 1943, Dr. Pandya's services were requisitioned by the Government of India in the Department of Industries and Supply. He served first as the Controller of Metals. With his quick perception and mastery of new and complicated problems, he was outstandingly successful. After a brief period of service in the Supply Department, he was promoted to the high position of the Dy. Director-General of Munitions Production, a post not hitherto held by an Indian. It is a widely accepted fact that during his tenure of office, Dr. Pandya contributed a great deal towards the growth and development of non-ferrous metals and heavy and light engineering industries in the country. At a time when British firms were still favoured, Dr. Pandya helped many Indian firms get their start or push on to larger projects. His enthusiasm and close analysis stimulated many Indians in Government and industry to begin actually planning for the industrial and technological development of their nation. After the war, it was natural that Dr. Pandya was offered a major post with the Central Government's Planning Department, but politics and communalism intervened, and he was not, finally, given the post.



During this period Dr. Pandya was made a Member of the Planning Commission which was established under the Chairmanship of Pandit Jawaharlal Nehru. Dr. Pandya later submitted a worked out project for the establishment of five I.I.T.'s in India on the basis of Massachusetts Institute of Technology. This magnificent contribution as an Architect of Indian Institutes of Technology in India has become pioneers in turning out outstanding engineers in different branches of Technology in India. Late Shri G. L. Mehta, former Ambassador of India and the President of I.I.T., Bombay in recent convocation paid moving tributes to Dr. Pandya for his great foresight in establishing these Institutions.

In 1945, Dr. Pandya was, thus, faced with several alternatives; he could accept some less responsible government positions; he could return to continue as Principal of Bengal Engineering College, or he could set out on his own as an independent contractor for large engineering projects. He told Dr. Sen Gupta that his interest in education was still great, but that he felt he would be more valuable to the cause of engineering education after some years as a leader of engineering projects in a newly independent India. He had noticed that government service often seemed to stifle the initiative and independent thinking of its members. While Dr. Pandya's dream for many years had been, as Dr. Antia, his friend and the former Director of Union Carbide in India, described it:

“To harness the big rivers and make them work for the prosperity of the country, to modernize agricultural methods and to make engineering serve the country in such a way as to abolish hunger and want. His main aim was to gather a group of Indian engineers to start a consultancy service. It was not necessary to place foreign consultants on a pedestal as done hitherto. Indian engineers could do as well or even better.”

Dr. Pandya became the Director and Chief Consulting Engineer for Hind Constructions Ltd. of Calcutta. Aware of the public feelings toward the profession he chose and the social stigma attached to the methods employed by contracting firms in securing and executing engineering works, he was determined to build up his firm's reputation by setting up standards of probity and straightforward dealing. By sheer dint of perseverance and hard work and with the prestige of his own name, he secured for it contracts for the big and complicated works like the construction of the tunnel at the Bhore Ghat for the Central Railway, the building of the tunnel for laying the pipe line for the Vaitarna-cum-Tansa scheme of the Bombay Municipality and construction of the Konar Dam and other projects for the Damodar Valley Corporation, development of the ports of Saurashtra, Kandla Project (Cutch). In these projects, Patel Engineering of Bombay joined with Hind Constructions, and Dr. Pandya was steadily to shift his work toward Bombay.

In the construction projects, Dr. Pandya completely overhauled, improved and simplified methods of calculating costs in preparing estimates for



small and big constructional works; for, he was convinced that it was possible to undertake work on big projects on the basis of a smaller margin of profit than were usually provided for, if estimates were based on precise and proper costing. On his advice, the firm adopted modern techniques and mechanised methods and secured contracts on cost plus basis. He was an expert in soil mechanics and his maxim was "we want to specialise, we are interested only in heavy engineering works like harbours, dams, bridges, tunnels and hydraulic projects." He concentrated all his great abilities in the execution of these large works which his firm had undertaken; and, under his supervision and guidance, all of them were completed successfully and according to schedule.

In these years, all three of the Pandya children were born, and the family led very full social and civic lives. Anant served on almost countless educational, civic and professional Committees and made significant and unique contributions to most of them. He was much interested in climbing the Himalayas and was able to participate in two long treks in those most beautiful mountains.

Early in 1949, Dr. Pandya received a call from the Central Government to take up, for a temporary period, the position of General Manager, Hindustan Aircraft Ltd., at Bangalore. With the approval of his firm's Directors, he readily agreed. It is well known that for the duration of World War II, the management of Hindustan Aircraft Ltd. was solely in the hands of American technicians. Anant was the first Indian national to be appointed as its General Manager. C. V. S. Rao, then a Director and colleague at Hindustan Aircraft, said, "Anant infused a new spirit and created a new atmosphere altogether. His charming manners and sympathetic and tactful handling of the personnel won for him the hearts of the staff and the rank and file, while his undoubted mastery of general engineering commanded the respect of even experts in aircraft engineering of which he did not profess to know much. The outstanding event of his brief stewardship was the formation of definite plans for manufacture of Trainer Aircraft. The first planes of Indian design and manufacture in independent India".

His Sudden Death

When Dr. Pandya had successfully set Hindustan Aircraft on a new and vigorous path, in a brief nine months, he moved his family to Bombay. He was now, primarily, associated with Patel Engineering and looked forward to building it into a pre-eminent firm for large construction projects in India, and eventually, perhaps, elsewhere in the newly developing countries. From December, 1949, until his death in June, 1951, he pursued large construction projects of dams, ports, and tunnels, including ports in Gujarat, dams in eastern India, and tunnels near Bombay. In 1950, the Central Government offered Dr. Pandya the post of Director-General of Industry &



Supply but ended up giving the post to some one else. As a member of professional and educational Committees, he was instrumental in beginning the plans for the institutions which were to develop into the Indian Institute of Technology. To see the newest techniques and purchase needed equipment, Dr. Pandya, travelled to Germany, France and the U.S.A. in 1950, and to Germany and Scandinavia in 1951. While returning to Calcutta, after inspection of Konar Dam in Damodar Valley, on June 1, 1951, the car in which he was sleeping was struck and he was killed. He passed away from physical sleep to death, not yet forty-two.

His Skills etc.

Dr. Anant H. Pandya combined unique scholarly, administrative and practical skills. He was a first-rate scientist and technician, but he was also an unusually wise and generous leader, and a person thoroughly ready for risks and adventure. He made significant contributions to the science of soil mechanics and to the massive construction projects related to it. India, and particularly, Bengal, can thank him for much of the progress which has been made in engineering and technical education since independence. Through his government service and civic, academic and professional committee work, he had great impact on the development of resource retrieval and industrial development all over India. His pioneering work in developing Indian firms capable of the most massive projects and the most sophisticated engineering problems has borne a real harvest in India by the present day. He was a model and a friend to all who knew him and worked with him in good will.

His premature death was a great loss to India and to the world. Patel Engineering has gone on to become a large company engaged in massive projects all over India and elsewhere in the developing nations. The educational institutions which he worked so hard for are turning out first rate engineers, and the construction contractors which he sought to legitimize have begun to receive their rightful support from the Government and the public. The Anant H. Pandya Memorial Scholarships regularly send Indians to the U.S.A. for engineering training. His wife, Lilyben, raised the children in his spirit and now continues his ideas both as a Director of Patel Engineering and as a Municipal Councillor in Bombay. His son has just completed his degrees in electrical engineering and economics at Massachusetts Institute of Technology (M.I.T.) and has returned to take up work in India. One daughter is a micro-biologist, and her husband, Dr. Kirit Yajnik, is a research director at National Aeronautics Laboratory in Bangalore. His second daughter is an economics researcher and lives in the U.S. with her American husband.

In closing, let me quote Dr. Sudhir Sen, who worked with Anant in Damodar Valley and was later an economic adviser in the United Nations, and Dr. Pandya himself:



Sen : *“You could almost see the fire of youth ablaze in his soul; capable of grim resolve and great tenacity; and crowning all, he had an unbending faith in his own future and in the future of his country. All these, taken together, made of him the most forceful and colourful personality I have ever known. . . .”*

“It was his dream to lift the contractor’s profession in India to a new level of dignity and integrity, just as the Tagore family, not long ago, rescued Indian music and dance from the gutter, gave them the stamp of social acceptability and turned them into a source of beauty and joy for all. This was his dream. And I have no doubt that he would have realized it, only he had lived long enough.”

Pandya: *“The principle of intellectual training in and through a craft is the most fundamental feature The true function of education is a creative one . . to create new forms of skill and by doing so to confer a higher social status upon occupations which do not at present possess it, or, as is the case in some crafts, have lost or are tending to lose it. . . . There is no substitute for experience, Each of us must ‘Go through the Mill’.”*

Dr. Anant H. Pandya began as an artist, sketching scenes in Bhavnagar and remained an artist until his death—an artist of dams, and tunnels and harbours, an artist of schools and factories, an artist of his country’s future and of life itself.

LILY PANDYA

