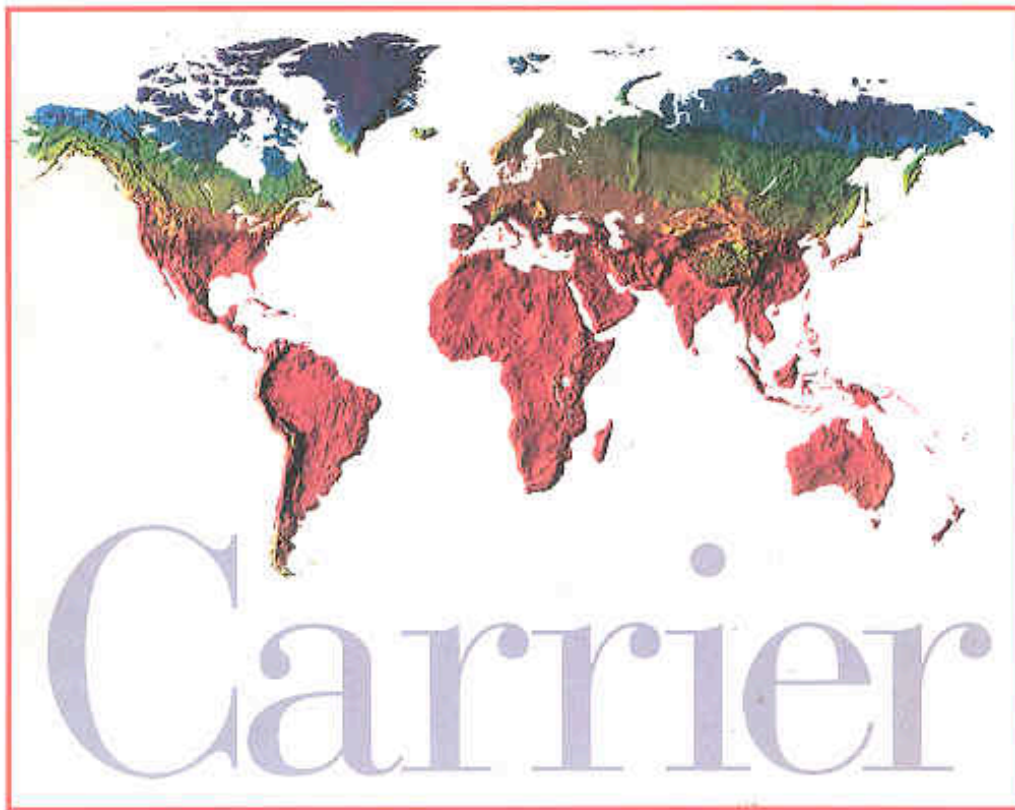


Willis Haviland Carrier
Father of Air Conditioning

VOLUME-1
Willis H Carrier: The Man and His Message



*1.4 The Globe Trotter - Foundation of a World-
wide Business, 1920-1930*

CARRIER THE MAN AND HIS MESSAGE

CHAPTER FOUR

Carrier, the Gobe Trotter -
better entitled Carrier, the
Internationalist.

Already it has been noted how Willis H. Carrier, researching in regard to the Centrifugal Refrigeration Machine, had extended his investigations to Europe. These investigations had commenced two friendships that were to have profound effect - the friendships with Stanley L. Groom in London and Dr. Albert Klein in Stuttgart. The ensuing commercial relationship was based on these friendships. Both Stanley Groom and Dr. Klein were wholehearted in their belief in Carrier and his ideas. The commercial relationship then maintained seems so loose when viewed with hindsight, the agreements were more gentlemanly than they were commercial and the territorial coverage by the agreements was wide but the commercial demand by Carrier from those territories unspecified. Truly these original assays into the area of international business were completely on a basis of mutual personal trust.

From England, through the Carrier Engineering Co. Ltd. of London, there was rapid growth of the international business because its territory covered the then wide British Empire, including India, South Africa and Australia. Though perhaps these first attempts were not highly profitable, the early contracts were of great prestige value. Air Conditioning for industry recommended itself to those Industries that in their manufacturing processes were particularly subject to temperature and humidity and such industries were among the major commercial enterprises, synthetic fibres, tobacco, natural fibres, cereals

sweets, chocolate, paper - all industries that were beginning to be exploited in every territory in the world as machinery was exported from Europe and the States to countries with lower labour rates. Air Conditioning for comfort was attractive to the wealthy and famous but more especially had its major advantages wherever there were masses of people, theatres, cinemas, conference halls, parliaments. So that publicity was inherent with the product. So that growth was in many territories enormous once any initial prejudice had been overcome. In India senior British and Indian officials were apprehensive of the effect of air conditioning on health, alarmed at the possibility of cold drafts, reaction at high temperature differentials. After all they had taken years to accept electric driven fans after the hand-pulled punkahs. But once experienced, it was only praise. The thankfulness of a good night's sleep in the tropics; the efficiency of working in cool surroundings in the heat of the day. These benefits were such a tonic that the pressure to produce simpler cheaper installations was a symptom of the rapid growth.

With the unveiling of the first Carrier Centrifugal Compressor in May 1922 and the first sale to Stephen F. Whitman & Sons of Philadelphia, the next ten years there were many machines sold including in 1925 for the Rivoli Theatre in New York, and the Carrier designed system for Ice-skating rink at the new Madison Square Garden in New York. During this period, Carrier was working on a scheme for the Morris Velho Gold Mine in Brazil with the air conditioning apparatus and the refrigerating machine at working depth while by 1928 Carrier systems were in operation for the House of Representatives and the Chambers of the Senate in the U.S. Capitol. These prestige installations in U.S.A.

were being matched by similarly important contracts in England, France, Germany and India, including the Secretariat and Legislative Buildings of Lutyen's and Baker's new city of New Delhi.

In October 1929, Willis H. Carrier visited Japan as a member of the World Power Conference representing USA, the head of the mission being Dr. Sperry. Dr. Sperry, who had a thorough knowledge of business in Japan through his business relations with Mitsui, was consulted by Dr. Carrier enthusiastic to start an air conditioning business in Japan. Fortunately Mr. Shigeji Tajima, former manager of Mitsui's New York office and then supervisor of Mitsui's N.S. Area was on the same ship as Advisor of the mission. He was one of the good friends of Dr. Sperry and it was quite natural to be introduced to Dr. Carrier. Mr. Tajima took up the matter with Mr. Kanao Nanjo, Executive Managing Director of Mitsui Bussan Kaisha Ltd. After careful study Mr. Nanjo considered Air Conditioning was within the scope of business of Sanki Engineering Co., a subsidiary of Mitsui Bussan. So Mr. Meijiyo Yasumoto, Managing Director of Sanki was recommended to Dr. Carrier. Mr. Yasumoto visited New York and negotiation was started among working levels. This initial personal association of Carrier, as was the case in all his globe-trotting international business relationships, was to lead to a successful commercial enterprise and to promote a loyalty that withstood the pressures of World War II in safeguarding all the documentary evidence of Carrier's connections with Japan. In 1977, when in his eighty fifth year, Matsujiro Nakagawa, who joined Carrier's work in 1930 when Toyo Carrier was established, wrote:- "Always I am proud and happy to have spent more than half of my life with Carrier's work. 'Big man Dr. Carrier', He will live in me for ever".

Undoubtedly these personal commercial loyalties that were set

up with Dr. Klein, Stanley L. Groom, Yasumoto were the main-springs of the growth of Air Conditioning but the energy that continued to make it tick was the gradual supply of enthusiasts as a result of Carrier's educational process from the annual training classes established in 1929. From the classes in that year, trained engineers from many different parts of America and Europe became available to act as "missionairies" in South America, India, China, Japan, South Africa and Australia, all of whom were to provide the dynamism that was to transform the Carrier idea into a multi-national international growth industry.

An early story of the Carrier International Division concerns orders they had for air conditioning equipment for three film stores for overseas for Kodak. Two of them worked well in Latin America but in Columbia, they had trouble and the Chief, Willis H. Carrier, learned of this because Kodak in Columbia informed Kodak in Rochester, who were big buyers of Carrier equipment and they used top level pressure. The Chief called in the Engineer in charge and asked him the problem. Having assessed what it was all about Carrier said "what do you intend to do?" The Engineer replied that he was giving instructions for the expansion valve to be closed down a little do as to give a lower dew point temperature. Willis H. Carrier waved his arms and said "Absolute nonsense, the valve wants to be wide open so that it can get more refrigerant in and therefore able to do more cooling". He then turned to the Engineer and said "where do you come from?" The Engineer replied "Kentucky". Carrier then said "what were you doing there" and the Engineer said he was on a farm. Carrier then said "you had better go back there because you will never make an Engineer !."

Engineer.!

In South Africa, his partner at a golf morning was astonished to see that Carrier was wearing an ingenious garment which could only be described as a sort of long sleeved waistcoat with a number of conveniently disposed pockets and compartments for the accommodation of such accessories as balls, tees, score card, pencil, cigars etc. etc. His partner expressed admiration for this revolutionary garment and Carrier told him that he had worked out his exact requirements, made a drawing, and presented it with his order to the tailor !

Shortly after its organisation Carrier Engineering rented a stable located in the rear of an old residence in Sumner Avenue, in Newark, New Jersey - primarily for the purpose of rehabilitating the tool kits used by its "Erecting Superintendents". The first plant was a rented building at Miller Street and Avenue "A" in Newark. In it about 40 people were employed "for making those specialities which we needed but which were not regularly made by others." The first plant purchased was a single storey, monitor type building 102' 624' at 750 Frelingheusen Avenue, in Newark. The next was the purchase of a 4 - storey building at 850 Frelingheusen.

The growth required increased manufacturing resources and by 1928 plant expansion became necessary. So a second

building was purchased in Newark, more than doubling the production area. This second plant was named the Lyle Plant (after J. I. Lyle, Carrier's close friend and partner) the first Plant already carried the Carrier name. From having no manufacturing area in 1921 by 1929 they had plan covering five acres.

During the period of intial growth and the intial development of Carrier's overseas relationships, the Chief maintained his absorption in technical problems. There never was a man as great who was as easy to approach and he was always easy to deal with on all occasions. The exception was if anyone was false in any engineering approach. There was the incident when his anger was apparent to all around. An ex - ception to make it so remarkable that there was a buzz of enquiry as to the cause. It turned out that the perpetrator was a salesman from a control company who had continued to press false claims which he could not back up. It seems to be about the only time that anyone saw the Chief really angry. Though during a technical discussion when his engineers were arguing over a loss of refrigerant, Carrier banged the table and said "you don't have a leak, you have a hole." His requirement to base approach to problems in the simplest ways was also his approach to the words used for technical

points. An Engineer describing something to Carrier used the then popular term "crackerjack". The Chief promptly said "well and what does crackerjack mean?" The Engineer bumbled a little in trying to explain and finally the Chief said "well if it has no definable meaning then don't use it".

All who met him felt that he was a "big man" and it would be fair to say that one could have no doubt that one was in the presence of a person of greater than average calibre. His personality was strongly felt. He had an unusual power of mental concentration. He thought carefully and thoroughly. When an answer to a question required working out he would say in his slow voice "now let me see" and would direct his mind to the matter, obviously shutting out all distractions of his surroundings.

Obviously his dominant technical interest at this period was on the application of the Carrier Centrifugal Refrigeration Compressors and his trips overseas were not only commercially orientated but invariably afforded opportunities to inspect installations. In England, he would escape from business discussions with Stanley L. Groom to iron out problems with the young Carrier Engineering Co. Limited's engineers. Already Carrier centrifugal refrigeration machines were operating at the Daily Mail newspaper printing works, at McVitie & Price

biscuit factory, at several Courtaulds fibre fabrications and Carrier would seize any chance to dash off to see for himself the problems on evaporators, condensers, that may have been the subject of correspondence between London and Newark and enjoy finding a solution by concentrated application. He had his jacket off so quickly and was down to the nuts and bolts of the problems that the young English engineers with their more conservative approach to dirty work (the strange but almost impenetrable barrier between the drawing board design engineer and the practical mechanic in the English tradition) were completely shattered. Once they recovered from their first astonishment, reluctant admiration for a Chief, who could not only argue them technically out of court but who could get down on his hands and knees to rectify a mechanical fault, grew to hero worship that framed the loyalty to Carrier in all overseas territories, a personal loyalty that was to withstand the changes and separations of the years ahead.

Of course, success had a great part to play in this attitude towards the Chief. It was a great feeling to be part of an organisation that was expanding all over the World but more particularly one that was creating such a high reputation for efficiency and honesty of purpose that grew with every new prestige installation.

One country will perhaps provide enough illustration of the form and extent of this growth pattern of air conditioning in an overseas territory.

India, in 1921 when Carrier Engineering Co. Ltd. was formed by Willis H. Carrier in partnership with Stanley L. Groom, was the "jewel in the crown of the British Empire".

Stanley L. Groom had in 1913 started an associated company of Buffalo Forge Co. in England and he was intensely shrewd in his judgement of Carrier as an engineer. He would point to the fact that almost immediately after Carrier had joined Buffalo Forge, Carrier had realized that no reliable information existed on how much heat was absorbed by air. So that a more scientific approach could be made to heating problems, Carrier conducted extensive tests and produced a pattern of curves and tables to show the estimating engineer the correct combinations of heating pipe sizes, steam pressures and air velocities needed to achieve required overall temperatures. This data saved Buffalo Forge \$40,000 in the first heating season it was used.

By quoting this, Groom was emphasizing his basic theme that good engineering had to show a profit. It was in that frame of mind that India was quickly seen as a country needing air conditioning and by the mid twenties orders were mounting ranging from the Sholapan Cotton Mills, the Fuse Factory Kukee to the Dum Dum Factory Calcutta. By 1925 there was an office in Bombay and installations for the Council Chambers in Bombay and Calcutta were followed a climax by the work for Viceregal Lodge, the Secretariats and the Legislative Buildings, New Delhi.

At this stage (1930) the world depression with its devastating effect on the British economic scene nearly shattered the growth of Carrier in India. But, by luck, out of the New Delhi contracts had grown an association that introduced

air conditioning into a New Delhi cinema and then to a Palace in Rampur. So when other business was *depressed* contacts with the Indian Princes increased with contracts for Jaipur Rampur and Bikanie.

At this juncture, the London Company was anxious to withdraw from India. Its connection with Carrier had been renegotiated by purchasing the original share so that Carrier Engineering Co. Ltd. London became wholly British owned as a privated limited company before going public in 1936. The switch in India from London to U.S.A. occurred at the same time as Carrier were marketing their newly designed direct expanded equipment and self contained unitary equipment. This latter equipment had immediate appeal in India and by 1940, air conditioning was being experienced by individuals in their houses as well as in their offices and places of amusement. The growth promoted gradual local manufacture and eventually Carrier's agents Volkart B6s and the famous steel company, Tata had combined to float Voltas as a complete organisation in India covering manufacture and distribution of a wide range of air conditioning equipment.

Carrier's original idea has thus enabled the seasonal jaunt the Government to the hills to be ended and modern business can be continued irrespective of the climate. Any visitor to India becomes immediately aware of the tremendous growth of air conditioning in all aspects of life during years since the end of the Second World War.