

# *Willis Haviland Carrier*

## *Father of Air Conditioning*

VOLUME-1

Willis H Carrier: The Man and His Message



*1.11 Carrier, The Contributions to  
the Future, 1976*

## CARRIER, THE MAN AND HIS MESSAGE

### CHAPTER ELEVEN

#### Carrier, the Contribution to the Future

A most memorable moment was that of Neil Armstrong leaving on the first Space Exploration voyage and the picture focussing on Armstrong carrying his own personal air conditioning unit. Television shots inside Nuclear Submarines have emphasized the primary air requirements while Naval ships designed to combat the possibility of Nuclear attacks must ensure that they can operate as closed ships, relying entirely on recirculation and regeneration for the air conditioning system. These facts can be used to project the influence of air conditioning on the future. It has removed one of the variables of life on the earth - the weather. It has ensured that in any space man can reproduce the weather/environment for himself that will enable him to continue to live. Such has been the experience of man's exploits on the moon and will form the basis of designs for exploits on other parts of the universe.

It has also enabled penetration into the earth - from air conditioning experience in deep mines - to provide for existence in depths not previously possible. The gas proof shelters of the last war and simple childish affairs when compared with the underground shelters now constructed under cities in Switzerland as protection against nuclear attack. This threat of nuclear warfare must be considered since the history of man confirms that destruction forces when known are invariably used when the domination by force can be assessed to be profitable. So obviously precautions will be considered and protection designed accordingly.

The building of new cities after the world war has revealed the deep necessity for the planning for communities to observe the rules that underlaid the way in which villages and similar community habitats evolved. That evolution was varied to suit a number of influences especial regard being made to the social, religious and entertainment facilities with due regard to the means by which people could so congregate. The advent of the car and its general distribution led to the belief that the planning could be based on the arm of transport being the car. It has already been realized that again an error in time/space has been made and the rethink is emphasizing the necessity for restricted areas.

If man is now required to think of building new cities on the moon, while mining of the moon's minerals is progressed, then the development of basic community life could be planned with these values in mind.

But it is the developments of the next few decades that are of most interest. It is clear that the industrial use of computers is only beginning and the extent to the eventual use can only be conjectured. The accuracy with which movement detail of manufacture can be programmed and reproduced will have a profound effect on the planning of manufactured production. This must be accompanied by similar improvement in the environment. Pollution of the industrial environment by noise, dust and bacteria will not be tolerated and the air conditioning design while not changing any one of the principles laid down by Willis H. Carrier will require to emphasize some more

than others.

On February 28th, 1949, Willis H. Carrier stated:-

"Air conditioning is the control of the humidity of air by either increasing or decreasing its moisture content. Added to the control of humidity is the control of temperature by either heating or cooling the air, the purification of the air by washing or filtering the air, and the control of air motion and ventilation."

Like all such expressions of basic principles, the results depend on the availability of practical usable equipment. In the early days, the specified conditions were limited by the control equipment available. Carrier himself had had to design a hygrostat and thermostat suitable for control of air conditioning until manufacturers of controls discovered there was sufficient market in air conditioning available to make it profitable to design, manufacture and distribute instruments and control systems suitable for air conditioning installations. Progress in design of control equipment will now in itself assist in the increased sophistication of the air conditioning design.

In the same way, the limitations on purification have been the availability of filtering media. The pressure of demand has succeeded in production of a large range of high quality filters - influenced greatly by the increasing requirements for pure air in surgical operating theatres, especially for transplant operations. Air conditioning has been able to combat the air borne bacteria and prevent growth of bacteria count in an area such as for burns

treatment and it is not difficult to envisage a future when even the control of viruses will be possible.

Underwater exploration has so far led to some permanent laboratories submerged with visits by resident specialists in the same way as space laboratories exist and can be periodically visited for experimental analysis. Extend this to housing under the sea so that exploitation of the minerals at sea bed can be progressed and you have a whole new vista for mankind, which could not have been started but for the successful progress in the art of air conditioning starting from Carrier's persistence in his original theories.

For the immediate future, however, the great advantage will be in the development of mechanical aids to industry, computerised robots carrying out precision instructions on a preplanned programme. The computers will require as little space as possible. The pressure will again be on the efficiency of the air conditioning to enable continuous working without variation in component reaction.

It is a world of greater variety of choice for the human being that has been enlarged by the growth of air conditioning. Carrier's original thoughts on the way it would enable weather to become a less restrictive element in man's progress have been fulfilled.

At an institutional dinner not long ago a young air conditioning consultant eulogising on the number of different

air conditioning systems now available and somewhat carpingly said only a few such systems were of Carrier design. He missed the truth. He confused the business corporation with the man. Without Carrier, there would have been none of these systems. Without Carrier's ideas back in 1901, Air Conditioning would not have become the great industrial influence in the world. Without Carrier, the engineers who have created this industry would not have been trained. How richly Carrier deserved the title of the Father of Air Conditioning.