

### *From the Editor-in-Chief*

Prof Suri Bhagavantam was the Scientific Adviser to the Defence Minister during 1961-1969. The scientific community is celebrating his Birth Centenary this year. Prof Bhagavantam's Birth Centenary Celebrations were launched at the Osmania University, Hyderabad, on 14 October 2009; many other events are planned by various institutions with which he was associated. Keeping this in

view, Defence Science Journal requested Dr M Krishnamurthi, till recently Chairman of the Journal's Editorial Executive Committee, to contribute on the occasion of Prof Bhagavantam's Birth Centenary Celebrations. The following article provides a glimpse of the multifarious contributions made by Prof Bhagavantam to the Defence R&D in specific and to the Indian science in general.

## *Professor Suri Bhagavantam Centenary Celebrations*



Fourteenth October 2009 was the 100<sup>th</sup> birth anniversary of Prof Suri Bhagavantam, the eminent Scientist, able Administrator, and one of the Principal Architects of Defence R&D Organisation. He succeeded Prof DS Kothari, the founder of the DRDO who served as Scientific Adviser (SA) to Defence Minister and Director General, DRDO for eleven years. In the first fifteen years after independence, Indian security

threat perception was quite low and this was reflected in the allocations for Defence by the Government of India. The only perceived threat was from another nascent and much smaller nation—Pakistan. The Himalayas were considered an impregnable natural barrier and in any case India firmly believed that China would never invade India. If the Defence allocations were low, the finances allotted to DRDO were even lower (percentage-wise). Apart from this low funding Dr Kothari felt inhibited to some extent by the advice given by Prof PMS Blacket that DRDO should not attempt to design and develop such major systems as aircraft, missiles, tanks, radars, etc., in view of the very poor industrial base in the country which did not hold much promise of expansion in the foreseeable future.

From 1957, Dr Bhagavantam was Director, Indian Institute of Science (IISc), Bangalore, India's foremost science research institute. His earlier experience as a Government Official at the India High Commission in 1948-49 made him decide not to take up any government assignment in future. But Shri VK Krishna Menon, who was High Commissioner for India in London at the time, developed a great liking for Dr Bhagavantam. So when the post of Scientific Adviser fell vacant, Krishna Menon who was the Defence Minister, requested Dr Bhagavantam to take over. However Bhagavantam was very reluctant and it took all the powers of persuasion of Shri Menon to make Bhagavantam agree to his offer. As a compromise, Bhagavantam decided to continue as Director, IISc, along with being SA to Defence Minister.

Thus on 1 July 1961 started a new stage in Dr Bhagavantam's and DRDO's life. The relaxed attitude towards Defence mentioned above was reflected in the fact that while heads of other scientific organizations like CSIR and AEC were given the status and powers of a Secretary in the Government, Bhagavantam's request for a similar treatment was turned down. After a few months Bhagavantam realised that he was not able to do justice to either of the two posts he was holding and therefore gave up the Directorship of IISc and moved to Delhi on 1 April 1962.

As full time Scientific Adviser to Defence Minister and Director General DRDO, Bhagavantam brought to bear his rich experience of the previous 30 years. Bhagavantam did his matriculation and college education in Hyderabad at City College High School and Nizam College, respectively. He stood first in matriculation and first in first class in BSc (Physics) of Madras University. His formal education ended with a BSc degree. As a mere teenager, he joined the research laboratories of the Indian Association for Cultivation of Science under Professor Raman at Calcutta (now Kolkata). All the other research scholars were about ten years or so older and they treated him with a certain indifference in the beginning. Raman himself gave him the task of collecting all information on magnetic properties of matter, the present state of knowledge and possible future lines of research. He gave him 2 months time for this. However, a month or so later, Bhagavantam expressed his readiness to deliver a talk on the subject. Immediately all the staff and scholars assembled and Bhagavantam delivered his first talk. It was so comprehensive and mature that everybody including Raman was highly impressed. They realised that they have an exceptionally brilliant scholar among them. After that the others all became very friendly with Bhagavantam. These friendships lasted the life times of all those involved.

While at Calcutta, Bhagavantam submitted a thesis for the MSc degree of Madras University. The story goes that the foreign examiner sought a clarification whether the thesis was for a Master's degree or for a doctorate degree. Such was the standard of the thesis.

Very soon thereafter, at the age of 22, Bhagavantam joined the newly started Department of Physics at the Andhra University as a lecturer in 1932. He, along with two other distinguished colleagues, built up the Department of Physics into a very active research centre in various branches of physics. He became a Professor in 1938 when he was not yet 29 years old. He published many papers and produced several doctorates. He himself was conferred the DSc degree (Honoris Causa) by the Andhra University in 1937. He continued as Professor at the University till 1948. In 1941, at the young age of 31 years he was appointed Principal of the University college at a time when the Independence movement was at its peak and the student world was rebellious. Many others were not willing to undertake this responsibility especially as the earlier incumbent was forced to resign for being lenient towards the students. Bhagavantam ably steered a middle course without displeasing the government or students too much. He stuck to this task with a rare devotion although it did not make him very popular with students.

During 1948-49, he was the first Scientific Liaison Officer at the India High Commission in London. This was his first foray abroad. His reputation as a physicist was so high that many

universities in Britain and all over Europe invited him to visit and deliver lectures. Bhagavantam could only accept a few of these invitations and he made several friendships during this time. He discovered that his books on Raman effect and Group Theory were translated into Russian and were widely read. Bhagavantam was not yet forty at the time.

On return from England, he moved to Osmania University in 1949 as Professor of Physics and Director, Physical Laboratories. The latter was specially created for him to develop into an active research centre in various branches of physics. He was given adequate funds, both by the University and CSIR, for this purpose. In 1952, he became Vice-Chancellor of Osmania University while still in his early forties. In the 5 years he was Vice-Chancellor, he ensured that all departments of the university became active centres of research producing doctorates. This tradition has continued ever since. He continued to guide research students in the Physical Laboratories even during his tenure as Vice-Chancellor.

In 1957 he moved to Bangalore to become the Director of Indian Institute of Science (IISc). This position he held up to April, 1962 as mentioned earlier. During this period he got a special status for the Institute as a deemed University. Thereby, it was able to confer various degrees on its students and research scholars. Apart from this he skillfully warded off an attempt by the Government of India to take over the Institution on a par with the IITs. Thus he preserved the autonomy and unique character of the Institute. Further, he persuaded the heads of various departments to agree to the creation of several professorships in each department. He could not however put this into practice as he left the Institute soon thereafter. Even at the Institute, he set up his own research laboratory and continued his scientific pursuits and guided two students for the PhD degree.

Thus when he took over as SA to RM he was a physicist of international repute, an established administrator as proved during his days as Principal, Vice-Chancellor and Director, and above all, a teacher and orator of unequalled reputation. In the very first year as SA, i.e., 1961, Bhagavantam set up eleven new laboratories or establishments covering a wide variety of disciplines. Another six were added in 1962 making a total of 17 laboratories in the first 18 months. This was made possible because of the close and warm relationship between the Defence Minister and his Scientific Adviser. Bhagavantam chose to ignore Blacket's advice and established such major laboratories as Aeronautical Development Establishment, Combat Vehicles Research and Development Establishment, Defence Research and Development Laboratory, Defence Electronics Research Laboratory, etc. Each of these laboratories was intended to develop major Defence systems in due course. All this was done despite the low Defence budget of those days.

In October-November 1962, things changed rather drastically with the Chinese invading India across the Himalayas and over running large areas of Indian Territory. In the aftermath of this,

Shri VK Krishna Menon ceased to be the Defence Minister which circumstance made Bhagavantam's position in the Defence Ministry very difficult! Simultaneously, however, Defence budgets rose phenomenally and suddenly a 2000 km long border along the Himalayas, from Ladakh in the west to Arunachal in the east, became an active and live frontier. This required the positioning of a significant part of our Army, and to some extent, Air Force at high altitudes on a permanent basis. New problems for Man and Machine were created by this and the DRDO had its work cut out. Ignoring his personal equation—or lack of it—with the new Defence Minister as well as the almost hostile attitude of the senior officials of the Ministry, who were jealous of his earlier pull with the then Defence Minister, Bhagavantam stuck to his post with the same dedication. However it took seven years, after Shri Menon left, for Bhagavantam to set up fourteen more laboratories that were found necessary to meet the requirements of Army, Navy and Air Force. Despite personal difficulties and refusing to be tempted by very attractive offers from various academic institutions, Bhagavantam thus built up the DRDO. His planning was so comprehensive that after his retirement in October 1969, DRDO did not feel the necessity to start another new institution till 1983 when the Centre for Artificial Intelligence and Robotics was set up in Bangalore. These were subjects which could not have been foreseen in the nineteen sixties.

Dr Bhagavantam was essentially a self made man and a purely indigenous product. He was a rare combination of a very capable and innovative experimental physicist and an equally strong theoretical physicist. He was a very able administrator. He reached many of his milestones very early in life. Some of his early students for doctorate were as old as or even older than himself. His speeches were clear, precise and tailored to the level of the audience. After he gave one popular Friday lecture at the Royal Institution in London, he was invited to give one more the same year which was rather rare, especially for a foreigner. His dedication to the task on hand was exemplary as must be clear from the above narration. His relationship with his colleagues was extremely courteous and open. He was easily accessible to all. He was a man of erudition and humour. His quick repartee in discussions and meetings was well known. His relationship with his students was along the lines of traditional *Gurus* with Mrs Bhagavantam being the ideal *Guru Patni* and mother to the students.

It is a pleasure to record this note on the occasion of his birth centenary.

#### **Dr M Krishnamurthi**

Formerly Chief Controller R&D in DRDO, was a student and close associate of Dr Bhagavantam between 1940-69. They worked together at Osmania University, Indian Institute of Science, and DRDO. Till 2007, he was the Chairman of the Editorial Executive Committee of the *Defence Science Journal*.

*Readers wishing to read more about Prof Bhagavantam may see the January 1990 Special Issue of Defence Science Journal brought out in his memory.*