

Correspondence

A Physics Museum in BHU in 1942*

B Anantha Dasannacharya**

(Received 03 October 2017; revised 18 April 2018)

This refers to the Project Report, "History of Science Museums and Planetariums in India" by Jayanta Sthanapati published in *IJHS*.

It may be noted that a Physics Museum was established in the Physics Department of Banaras Hindu University as early as 1942 by Professor Balebail Dasannacharya, Head, Department of Physics, to coincide with the Silver Jubilee celebrations of the University. The museum was inaugurated by Sir C V Raman on 20th January 1942. There is no published account of this in a journal. However, I have a pamphlet prepared by Professor B Dasannacharya after the inauguration. Cover page of the same is shown in Appendix I.

I shall summarise the salient features of this pamphlet about the museum. However, a brief account of Dasannacharya and his research career between 1920 and 1929, in Munich (~4 years), London (~2 years) and Chicago (~2 years), is relevant to highlight the background which induced him to start the museum at BHU.

As a D. Phil. student in Munich he had an opportunity to visit the world's best physics museum there, displayed in 35 rooms. London also had a science museum with a small section devoted to physics and located in the Children's section. Chicago seems to have developed a physics museum some years after he returned to India. In his own words, "America is the first

country to introduce the idea of museums for physics for schools and universities. In University of Chicago, Professor H B Lemon has shown the development of physics from inertia to cosmic rays in about 240 experiments (which) work without fail or fake(on) pressing a button or pulling a string or two." This was in late 1930s. "

BHU was inaugurated in 1916 and for the first decade and a half Physics was a teaching department with little research. Dr B Dasannacharya joined BHU in 1930/31. He decided to change this state by taking two specific steps, namely, a) starting research activity starting at the masters level (several papers were published by M.Sc. students) and b) creating a physics museum to add to the educational content of class room teaching , as soon as space would become available. When this happened it took some years to create the museum which, as mentioned before, was opened in 1942. It was much inspired by the Chicago model of involving the head and the hand in imparting knowledge. 'Mens et Manus' meaning 'mind and hand' is the motto of the well-known Massachusetts Institute of Technology and it emphasises the necessity of a coordinated use of the mind and hand. This is where museums play their role in education.

To quote from the pamphlet,

"This museum must be able to present the subject by means of apparatus arranged rationally to bring

* Copies of the pamphlet is available from him at adasannacharya@gmail.com

**Director (Retd.), Solid State & Spectroscopy Group, Bhabha Atomic Research Centre, Mumbai. Mailing Address: Flat 4, Beach Resort Cooperative Housing Society, Plot 1, Sector 10A, Vashi, Navi Mumbai-400703, Email: adasannacharya@gmail.com

out the development of the science, but above all, it must contain short bits of information to act as guiding posts, in correlation of apparatus."....."In the Physics Museum which you (C V Raman) are asked to open, Sir, thought has been given to all these considerations...."

"For example, in the section on optics we first present a dissectible model of the eye. Then the idea of a straight ray of light is introduced by saying that two pins define a ray & a third pin enables the course of the ray to be followed. You actually see two pins in front of a mirror & you see their images in line with a third pin. What is seen is shown and what the reality is, is indicated. In the same way, image formation in curved surfaces, refracting surfaces, blocks, prisms, lenses, are presented. In neighbouring shelves some instruments based on them are shown. On an open table are given a lamp, lens & screen of mosquito curtain cloth so that image formation, by convergence of rays can actually be tried by the visitor by himself. This is the method. Who has got eyes to see, can see, and who has not?"

"The first almirah is named Length, Mass & Time. These names are indicative of their contents. We have the next almirah for general physics, containing levers, springs, friction & their applications, hydrostatics & pneumatics. The next almirah is devoted to acoustics, the next to heat, light, electricity, magnetism, discharge of electricity in gasses, positive rays, electromagnetic waves, x-rays, crystals & the periodic system of elements. In addition to these we have a number of apparatus for all sections of physics which could be partly or completely handled and manipulated by the visitor"

The museum was inaugurated on 20th January 1942 by Sir Raman. His speech, as reported in the pamphlet, is reproduced in the Appendix II for its historical value. The last paragraph therein commends this 'museum and exhibition' for its 'tremendous educative value'. Sir Raman, declaring the museum open, concludes,

"Dr Dasannacharya is a pioneer in this line and he has, by creating his museum, done a distinct and valuable service to physics. I am quite convinced of it."

Following the inauguration in 1942 many items were added over the years. Some of the

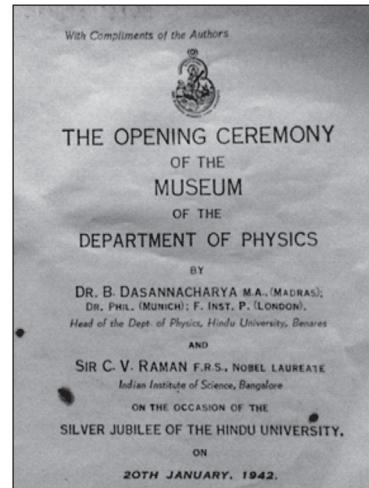
exhibits which I still remember, because they impressed me most as a college student, were a) cut-opened locks to show principle of lever, b) demonstration of Lissajous figures, c) display of the periodic table by their minerals, d) a scale model of Jaipur's Raja Jaisingh's Jantar Mantar in Varanasi, d) demonstration of Newton's third law of motion using cycle wheel mounted with a electric toy-engine, e) a nearly 2 feet long single crystal of Quartz, f) a carved replica of the sky on a large earthen pitcher, representing the celestial sphere, (a poor man's planetarium) g) demonstration of resonant and forced vibrations through multiple pendulums, h) an engine from an aeroplane which had unfortunately suffered an accident near Banaras and so on.

Alas! sometime after the retirement of Professor Dasannacharya in 1956 the museum, finding little appreciation, witnessed what all physical objects witness sooner or later — destruction: it was dismantled by the department to accommodate offices of the faculty!

En passant, it may also be mentioned that there was also a natural science museum at BHU at the same time and a mention of this is made in the pamphlet.

Appendix 1

Inauguration of the Museum at Department of Physics, BHU



Appendix 2

Pamphlet (a portion only) containing Sir C V Raman speech at the inauguration

(8)

Dr. Dasannacharya, interposing said "We would be only too happy if you would have your way and say as much as you like."

Sir C. V. Raman, continuing, said.

A museum is, as usually understood, a place where old unusable apparatuses, sometimes historical ones, are stored up. Dr. Dasannacharya has referred to the great German Museum at Munich and the Demonstration Museum at Chicago. Dr. Dasannacharya is an intellectual child of two great universities Munich and Chicago and his museum which he calls a 'baby' is a child of Munich plus Chicago.

The German Museum at Munich, colossal, erected at enormous cost, sets out the *historical development* of science in all its details. That sort of museum has tremendous educative value. Usually, at museums, you have labels prominently displayed every where "Dont touch", but in the German Museum you are told "Turn handle here" or "Press this button and see on the screen." You have the most difficult scientific phenomena presented to you in all their reality. It is

(10)

greatest, unforgettable experiment I saw in all my life was the one shown by Prof. Joliot at the Exhibition. He set up a huge transformer and he showed me the production of electrical sparks and discharges, 20 ft. long. Another, similar one, was the experiment on showers produced by Cosmic Rays.

Chicago is one of the biggest, most famous and richest of the American Universities and Dr. Dasannacharya has pointed out how demonstration experiments in its Physics Museum are set out, in very large numbers and how with the minimum of effort the inner reality of physical phenomena could be grasped by going through it. Dr. Dasannacharya has combined the idea of the German Museum of historical development of physics with the idea of the Demonstration Laboratory of the Chicago University. The effect is marvellous. Its educative value is immense. You know reality when you handle and see something of it.

Dr. Dasannacharya has referred to the doubtful utility of spending several hours in the practical classes. I do not think that there is any real antagonism. Practical work

(9)

wonderful, simply unforgettable. I have gone through the physics and some other sections, but not the whole of the museum. It embraces not only physics, but also mathematics, chemistry and in fact, all the sciences pure and applied. I was told by somebody, this morning that you have about 26 miles of road in your University campus! If you are only to walk through the whole of the German Museum at Munich just one way, you will cover a distance of 16 kilometers or nearly 10 miles.

I am reminded of the great Paris Exhibition of 1935 to which I was specially invited. It made the most tremendous impression on me. The whole development of science and technology were shown. It required the combined efforts of the scientists of all the universities of France for full six months exclusively working on the setting up of the exhibits. Every phase of scientific activity was included. It is amazing how a subject like mathematics even, lent itself for presentation. The smallest to the most difficult mathematical operations were presented and made easily understandable by means of ingenious models, charts and diagrams. The

(11)

has its own place in training a physicist, but it need not be carried too far.

Dr. Dasannacharya has appealed for more space and he wants the Departments of Botany and Zoology to go to buildings of their own. I wish to give him a piece of advice, however. **He should induce these departments to leave their museums behind.** I was most interested in the plumage of peacocks that Dr. Dasannacharya has got in his museum. The zoologists have a rich collection of birds and animals, of an immense variety of colours! It would be a most fascinating subject for study and research, the colour of birds, animals, shells, leaves, flowers etc. I must mention here about the collection of crystals. I myself was wanting to have a good collection of them for the last several years and I must congratulate Dr. Dasannacharya on his very good collection of crystals. Geologists, I know, are apt to think that crystals are their peculiar monopoly. But what the geologists are interested in finding, is generally the external appearance and their geographical and stratigraphical distribution. A crystal is a marvellous thing. Take a crystal of alum, the com-

**Pamphlet (a portion only) containing Sir C V Raman
speech at the inauguration**

(12)

mon substance alum. It crystallizes in a most wonderful variety of forms. A tiny crystal, when it is transparent will glisten with wonderful brilliance. I show some of these to the ladies when they come to my laboratory at Bangalore. They cannot be distinguished from diamond. They are indeed so wonderful ! It is only the physicist who understands and can study the deep inner realities of the crystals. A crystal of real diamond, it is astounding, how it enables us to understand some of the mysteries of the solid state.

The sort of museum that Dr. Dasannacharya has built up is not merely a museum, it is a museum and exhibition both combined in one. It is going to be, as he has wisely decided, a permanent one. It has great possibilities of expansion. I am convinced that its educative value is tremendous. Dr. Dasannacharya is a pioneer in this line and he has, by creating his museum, done a distinct and valuable service to physics. I am quite convinced of it. I declare the museum as opened.

B. H. U. PRESS, BENARES.

BIBLIOGRAPHY

Pamphlet of the Museum of the Department of Physics, Banaras Hindu University (BHU), Vide Appendix II

Sthanapati, Jayanta. History of Science Museums and Planetariums in India, *Indian Journal of History of Science*, 52.3 (2017): 357-368.