By ROSLAN ABD SHUKOR

Occasional Soapbox

Passing of a great physicist

The brilliant scientist who nurtured many young physicists will be sorely missed.

SCIENCE is often taken for granted. Many may not appreciate how physics, a discipline of science, has benefited the world. Without advancements in physics, many present day technologies may not have seen the light of day. The laws of physics have been the fundamental driver of most such developments. Many eminent world physicists have contributed to the advances made and we should recognise their contributions.

One such great man I came to know was Philip W. Anderson. He died on March 29, aged 96.

An alum of Princeton University in the United States, Anderson has been hailed as one of the great physicists of this century. His work has been the inspiration behind many modern day technologies.

Anderson worked at Bell Laboratories (of AT&T fame, ie, the American Telephone and Telegraph Co) in New Jersey, United States, from 1949 to 1984, focusing on a wide variety of problems concerning the physics of materials. He also taught at Cambridge University in Britain from 1967 to 1975. In 1984, he retired from Bell Labs and was made Joseph Henry Professor Emeritus at the Department of Physics in Princeton University in New Jersey.

Anderson made a wide range of contributions in physics, including in the area of superconductivity, a property which is at the core of present day electronics. Some of his theories help explain phenomena in high energy physics, particle physics and other theories of the universe. He is most famous for his contribution to the theory that explains how insulators work. This won him the Nobel Prize in Physics in 1977 with Sir Nevil Mott of Cambridge University and John van Vleck of Harvard University.

His Nobel prize-winning theory found wide application in electronics including memory technology in computers. Some of today's computer features owe their origin to Anderson's work in the 1960s and 1970s.

However, his contributions to other branches of physics are even greater. Most notably, Anderson proposed a concept that revolutionised the study of particle physics. This proved crucial in the development of the theory behind the much publicised "Higgs mechanism". The hunt for the Higgs particle led to the construction of the world's largest particle accelerator at Cern (the European Organisation for Nuclear Research) in Switzerland where the existence of the "Higgs boson" particle was proven in 2012. That discovery made headline news all over the world. This led to the Nobel Prize for Peter Higgs and François Englert in 2013. Malaysia's Academy of Sciences has been sending local physicists to observe and participate in the experiments at Cern.

The writer with Anderson (right) at Princeton University's Department of Physics in 2003. — ROSLAN ABD SHUKOR

I met PW (as he is affectionately known) while on a sabbatical at Princeton University's Physics Department in 2003. He showed interest in a book on superconductors that I had written in Malay. He was intrigued by how the Malay language explains the complex theory of superconductivity. While he was working on the theory of superconductivity on the top floor of Jadwin Hall, other colleagues and I worked on the experimental aspects in the basement. Today his theory is important in the study of "spin liquids", a new state of matter which has attracted a lot of scientific interest.

Anderson showed that science is not boring. That scientists are not nerds. He loved playing the Japanese board game Go. He would spend his free time playing the game with colleagues during lunch. Occasionally, he would even let them win!

That may explain why he remained active in research right up to the ripe old age of 94. He was also full of humour and had a unique ability to persuade and influence people. PW had also been helpful in nurturing many young, talented physicists. There is no doubt that he will be sorely missed.

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