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► **To cite this version:**

| John Michaël Dudley. Lessons from a Giant. Europhysics News, 2015, 46 (1), pp.3. hal-03423032

HAL Id: hal-03423032

<https://hal.science/hal-03423032>

Submitted on 9 Nov 2021

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Lessons from a Giant

John Dudley

A quotation well-known to physicists is Newton's acknowledgement of the debt he owed to others in his work: 'if I have seen further it is by standing on the shoulders of giants'. We in the global physics community have lost our own contemporary giant on January 27 with the death aged 99 of Charles Townes, whose work on the maser and laser essentially opened up the fields of modern optical and atomic physics and their many associated applications.

he story of Townes's life and his discovery of the principles of maser operation is wellknown. He shared the Nobel Prize in Physics in 1964 for his work on maser and laser devices and from 1966 until 1970, he chaired NASA's Science Advisory Committee for the Apollo Lunar Landing programme. He also was involved in many other committees and organisations, served as University Provost and was also past-president of the American Physical Society. His commitment to and enthusiasm for science was lifelong, and he continued to carry out research actively after his 'retirement', in fact publishing as first author a paper describing stellar dust distributions at the age of 96! His writings and works have had very broad impact in many other areas of science, technology and policy.

What prompts me especially to write about Charles Townes in this first editorial of 2015 is the fact that his example is of so much relevance to us all as EPS both celebrates the International Year of Light and begins a strategic programme towards influencing science policy in Europe. Charles Townes certainly saw the many reinforcing and positive links between basic science and engineering, but he was a very strong advocate for improving understanding amongst the public and politicians of the economic impact of long term basic research. In an interview appearing in a 2013 production for South Carolina ETV, he says clearly: 'Politicians can't support science so strongly because it isn't going to pay off immediately. It pays off many years later. The laser is now billions of dollars of business, but it's been about 50 years...' This is a message that EPS along with many other partners has been struggling with little success to have heard by decision-makers for years now, but we must be persistent and keep trying.

I am approaching now the end of my mandate as EPS President, and although I have been very strongly supported by many committed scientists who volunteer their time to EPS and other societies, or who work on policy and other government committees, I am convinced more than ever that the number of physicists who take on the task to spread this message is far too small. Many more of us need to get involved, and this was something I tried to convey to a broader audience when I had the honour to speak at UNESCO Headquarters on the 19 January at the Opening Ceremony of the International Year of Light. Given the particular theme of light science being celebrated, I did not hesitate to again quote Charles Townes who wrote in his book *How the Laser Happened: Adventures of a Scientist* that he '...always felt that scientists should provide public service from time to time.'

It is of great concern that at the same time that science becomes more and more essential to the running of modern society, it is understood by the public less and less. Having in 2015 an International Year on a science theme provides a wonderful lever for us to promote the importance of physics and science in general, but it really is only the start. In my view, one of the most important outcomes of the next year must be to identify more of us within the community of physicists who will accept the lesson of Charles Townes, and who will take up the challenges ahead.

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Appearing in Europhysics News EPN 46/1 (2015)