

Introduction



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Authors for correspondence:

Silvana S. S. Cardoso

e-mail: sssc1@cam.ac.uk

Julyan H. E. Cartwright

e-mail: julyan.cartwright@csic.es

Herbert E. Huppert

e-mail: heh1@cam.ac.uk

Christopher Ness

e-mail: chris.ness@ed.ac.uk

Stokes at 200: a celebration of the remarkable achievements of Sir George Gabriel Stokes two hundred years after his birth

Silvana S. S. Cardoso^{1,2}, Julyan H. E. Cartwright^{3,4},
Herbert E. Huppert⁵ and Christopher Ness^{1,2,6}

¹Pembroke College, Cambridge CB2 1RF, UK

²Department of Chemical Engineering and Biotechnology, University of Cambridge, Cambridge CB3 0AS, UK

³Instituto Andaluz de Ciencias de la Tierra, CSIC–Universidad de Granada, E-18100, Armilla, Granada, Spain

⁴Instituto Carlos I de Física Teórica y Computacional, Universidad de Granada, E-18071 Granada, Spain

⁵Institute of Theoretical Geophysics, King's College, Cambridge CB2 1ST, UK

⁶School of Engineering, University of Edinburgh, Edinburgh EH9 3FB, UK

SSSC, 0000-0003-0417-035X; JHEC, 0000-0001-7392-0957; HEH, 0000-0002-0185-0598; CN, 0000-0002-0842-2537

Sir George Gabriel Stokes PRS was for 30 years an inimitable Secretary of the Royal Society and its President from 1885 to 1890. Two hundred years after his birth, Stokes is a towering figure in physics and applied mathematics; fluids, asymptotics, optics, acoustics among many other fields. At the Stokes²⁰⁰ meeting, held at Pembroke College, Cambridge from 15–18th September 2019, an invited audience of about 100 discussed the state of the art in all the modern research fields that have sprung from his work in physics and mathematics, along with the history of how we have got from Stokes' contributions to where we are now. This theme issue is based on work presented at the Stokes²⁰⁰ meeting. In bringing together people whose work today is based upon Stokes' own, we aim to emphasize his influence and legacy at 200 to the community as a whole.

This article is part of the theme issue 'Stokes at 200 (Part 1)'.



Figure 1. Group photograph of the 1899 Stokes Jubilee meeting taken at Pembroke College. Stokes is seated directly in front of the centre of the doorway; it is possible that the lady cut in half on the extreme right may be his wife, Mary, but the image is not clear enough to make out. Famous names are gathered around him, but unfortunately the list of signatures that provided a key to the image has been lost. We have identified just a few: to Stokes' right is Alexander Hill (the then Vice Chancellor of Cambridge, and a medical doctor), and to his right, with the bushy beard, is Kelvin. Directly behind Stokes is Alfred Cornu, and behind him is J. J. Thomson. Rayleigh is probably eighth from the left in the row of people standing.

The 13th of August 2019 was the 200th anniversary of the birth of George Gabriel Stokes. The Stokes²⁰⁰ meeting was held to commemorate this occasion, providing an opportunity to discuss and celebrate his contributions and the modern research fields in physics and mathematics that have followed from them. The meeting was held at Pembroke College, Cambridge, where Stokes studied, worked, and lived until he moved upon his marriage just around the corner to Lensfield cottage. Indeed, Pembroke was the venue for Stokes' Jubilee celebration in 1899; figure 1. Holding the meeting at Pembroke gave the participants—figure 2—the full Stokes experience: they entered the college through the entrance he used, walked the paths he walked, and ate with both a portrait and a bust of Stokes looking on. The meeting was held from 15–18th September 2019, just after his anniversary, with the conference dinner on Tuesday the 17th hosted by the current Master of Pembroke College. The numbers were limited to the capacity of the Old Library at Pembroke, which holds one hundred. This made for an exciting and intimate meeting to celebrate Stokes' achievements, with talks based on how his work affects different fields today. The aim of this theme issue is to provide a permanent record of some of the presentations and discussions at the meeting. The issue is timely because it is the bicentenary, and appropriate since the topics discussed, the past, present and future of the many fields Stokes worked on, including fluids, asymptotics, optics and acoustics, are just as important today as in Stokes' time. Two hundred years from his birth, Stokes is a towering figure in physics and applied mathematics. Bringing together in this issue people whose work today is based upon his own, we aim to highlight his influence and legacy at 200 to the community as a whole. Why is this important? Understanding the history of science and knowing what its outstanding figures did, and how and why they did it, is in our view important in of itself, but moreover the history of science has consequences for science today. We believe that meetings such as this, in which both scientists and historians of science participate and exchange ideas, are valuable to working scientists. Only by understanding the past can we break free from it; this is as much true in science as in other spheres of life.



Figure 2. Participants in the Stokes²⁰⁰ meeting gathered together in the same location in the grounds of Pembroke College at which the Stokes Jubilee photograph was taken in 1899. The architecture differs since extensive work was carried out on the hall behind in 1926. Key: 1, Ben Jackson; 2, Andrew Whitaker; 3, Mahboubeh Najafi; 4, Silvana Cardoso; 5, Fiona Jenkinson; 6, Reda Tiani; 7, June Barrow-Green; 8, Herbert Huppert; 9, Tim Pedley; 10, Gloria Sandford; 11, Michael Sandford; 12, Michael Berry; 13, Nigel Goldenfeld; 14, George Fortune; 15, Christopher Ness; 16, Luca Banetta; 17, Jonathan Barnard; 18, Jayne Ringrose; 19, Chris Howland; 20, Yang Ding; 21, Alastair Wood; 22, Brice Saint-Michel; 23, John Lister; 24, Colm Caulfield; 25, John Bush; 26, Peter Lynch; 27, Gerald Fuller; 28, Serafim Kalliadasis; 29, Anne De Wit; 30, Teresa Stokes; 31, Nicholas Lefebvre; 32, Julia Long; 33, Geoffrey Sandford; 34, Osamu Sano; 35, Cara Neal; 36, Panayiota Katsamba; 37, Sylvie Vergnolle; 38, Yunhui Zhuang; 39, Clare Rees-Zimmerman; 40, Kathleen Too; 41, Ken Lord; 42, Paul Ranford; 43, Mark McCartney; 44, Matthew Anketell; 45, Damien Hughes; 46, James Weber; 47, Christopher Higgins; 48, Roiy Sayag; 49, Paul Cosgrove; 50, David Smith; 51, Hermes Gadelha; 52, Fiona Love; 53, Stuart Mathieson; 54, Valeri Frumkin; 55, Atticus Hall-McNair; 56, Theresa Jakuszeit; 57, Oreste Piro; 58, Jordi Ortín; 59, James Robinson; 60, John Whitehead; 61, Sebastien Michelin; 62, Davor Krajnović; 63, Aoife Kearins; 64, Amy McCormick; 65, Danielle Bullamore; 66, Arna Sigurðardóttir; 67, Mariana Domingos; 68, Carlos Gutiérrez; 69, Luis Rocha; 70, Ana Morgado; 71 Ángel Báez; 72, Alexander Chamolly; 73, Olivier Darrigol; 74, Claudiu Patrascu; 75, Ana-Maria Bratu; 76, Mazi Jalaal; 77, Debasish Das; 78, Nathalie Vriend; 79, Meurig Gallagher; 80, Gemma Cupples; 81, Hélène de Maleprade; 82, Andrew Fowler; 83, Michael Bestehorn; 84, Kenny Breuer; 85, Steven Tobias; 86, Linda Cummings; 87, Ivan Christov; 88, Jon Chapman; 89, Christopher Lustri; 90, Scott McCue; 91, Marco Polin; 92, Andrew Bayly; 93, Anthony Bonfils; 94, Vastal Sanjay; 95, Idan Tuval; 96, Julyan Cartwright; 97, Anna Gunnarsdóttir; 98, Sándalo Roldán-Vargas. (Online version in colour.)

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