

Introduction



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Stokes at 200 (part 2)

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We present the second half of the papers from the Stokes²⁰⁰ symposium celebrating the bicentenary of George Gabriel Stokes.

This article is part of the theme issue ‘Stokes at 200 (part 2)’.

For 30 years, George Gabriel Stokes was the editor of this journal, *Philosophical Transactions*. ‘Long he bore the labour of the secretary’s pen’, a poem—box 1—recalls.

I am not sure, but I believe that the division of labour of which I have just spoken was in practice when Stokes became Secretary in 1854. If so, the charge of the publications of the Society was in his hands for the long period from that date until he became President in 1885. And it would be difficult to overstate the amount of the labour which Stokes bestowed on these duties during this long period. Though he naturally consulted his brother-secretary from time to time on the biological questions which were raised by the biological communications, nevertheless the sole charge of at least the main part of the communications of all kinds devolved on him, from the receipt of the communication in manuscript until its publication in the *Transactions* or *Proceedings*. He made it his

duty to make himself acquainted, so far as it was possible for him to do so, not only with the form but also with the substance of every paper which came in. He spared no pains in his efforts to secure that the form should be as good as possible under the circumstances. It is a matter of common knowledge that a scientific investigator, in making known what he believes to be a new truth, is more anxious about the substance of what he has to say than the way in which he says it, so that the latter at times leaves much to be desired. Stokes, as Editor of the Proceedings and Transactions, did his best to neutralize this tendency, carefully reading through the whole of the proofs, and, as these passed through his hands, making valuable suggestions to the author with the view of rendering the meaning of the sentences more clear. And, recognizing that the obscurity of a passage is often due to imperfect punctuation, he at times felt it his duty to offer advice to an author even with regard to his commas and semicolons. The papers which the Society published during Stokes' secretaryship are doubtless not in all cases models of lucid and elegant English; but where there is failure in this respect the fault cannot be laid at Stokes' door; he, during long years, did his best to make it otherwise.

So wrote Michael Foster, Cambridge physiologist and secretary of the Royal Society alongside Stokes, in the *Memoir and Scientific Correspondence* of 1907 [2]. Herein, we present the second part of the contributions to this bicentenary celebration of Stokes' achievements. As we have already seen in Part 1, and we find once again here, these range over huge areas of physics and beyond.

In fact, it was aspects of Stokes' character beyond his scientific contributions that first caught the attention of poets. Stokes was deeply interested in attempting to reconcile science and religion, and nineteenth- and early twentieth-century poets singled out his religiosity for praise—Jebb and Mason were both Cambridge classicists (boxes 1 and 2). A more recent poem by Michael Berry highlights his contributions to the theory of asymptotics (box 3). A couple of us have tried our hand at following this Stokesian poetic tradition and we celebrate his work in fluid mechanics (box 4), and sum up his entire biography in verse (box 5).

The Stokes²⁰⁰ Symposium took place at Pembroke College, Stokes' college, from 16 to 18 September 2019; we show representative scenes of those 3 days in Cambridge in figures 1–3. What is the function of celebrating his anniversary with a symposium and with these papers? In our introduction to part 1, we argued—as T. S. Eliot [4] and Michael Polyani [5], among others, have done before us for literature and science, respectively—that being steeped in the tradition is part of being able to produce new thought; original insight. As George Santayana wrote, 'those who cannot remember the past are condemned to repeat it' [6]; we believe that to be as much true in science as in other spheres of life.

Box 1. Sir George Stokes.

Not much he spoke. Far off beyond the ken
Of other thinkers ranged his thought. A smile
Of courteous patience touch'd his features while
He lent an ear to ordinary men.
Yet all the duties of a citizen
Claim'd him. He sat where Newton sat before,
Our burgess; and for science long he bore
The labour of the secretary's pen.

The assembled world brought homage to his chair.
And this man held it sure that none but they
Have endless life, who know the Son of God.
"Tell the young men to walk," his last words were,
"In holiness; it is the only way."
Full fourscore years himself that way had trod.

Arthur J. Mason [1].

Box 2. To Sir George Gabriel Stokes.

Clear mind, strong heart, true servant of the light,
 True to that light within the soul, whose ray,
 Pure and serene, hath brightened on thy way,
 Honour and praise now crown thee on the height
 Of tranquil years. Forgetfulness and night
 Shall spare thy fame, when, in some larger day
 Of knowledge yet undream'd, time makes a prey
 Of many a deed and name that once were bright.
 Thou, without haste or pause, from youth to age,
 Hast moved with sure steps to thy goal. And thine
 That sure renown which sage confirms to sage,
 Borne from afar. Yet wisdom shows a sign
 Greater, through all thy life, than glory's wage;
 Thy strength has rested on the Love Divine.

Richard Claverhouse Jebb [3].

Box 3. Emotional asymptotics.

Passions rise.

We cross the bifurcation;
 something intense and complex is born.

But it is evanescent from the start, and
 soon decays.

Much later, we meet again.

Now there is another dominant
 exponential in her life.

Crossing our Stokes line, all passion
 vanishes.

The whole thing was an error (function).

Michael Berry, 2000.

Box 4. A (Navier–)Stokesian limerick.

Sir George Gabriel Stokes
 was one of the brightest of folks.
 He wrote an equation
 for fluid in motion.
 The student might learn it, one hopes.

Julyan Cartwright, 2019.



Figure 1. The Stokes²⁰⁰ Symposium opens in the Old Library of Pembroke College. One of us (HEH) looks on as the Master of Pembroke welcomes participants to the college. (Online version in colour.)



Figure 2. The Stokes bicentenary dinner was held in the hall of Pembroke College. (Online version in colour.)

But would Stokes have approved of this theme issue on his bicentenary, and of the 27 articles that appear within it in the two parts? We hope so, but we cannot, of course, be sure. We do know, at least, that he was not absolutely opposed to such celebrations. While he was alive, he did allow a special issue in his honour. For Stokes' Jubilee in 1899, there was a special volume of papers in



Figure 3. Michael Berry explains asymptotics to the audience of the Stokes²⁰⁰ Symposium. (Online version in colour.)

Transactions of the Cambridge Philosophical Society. As *Nature* reported [7, p 129], among them were contributions by Boltzmann, Kelvin, Michelson, Mittag-Leffler, Poincaré and J. J. Thomson. His daughter remarked of his Jubilee:

He was so absolutely simple about it all, enjoyed it all so thoroughly and in such a perfectly unselfconscious way. He thought it most kind of people to take so much trouble in getting it up, and in coming such distances in order to be present; but there was no mock modesty; he accepted their judgment as it was offered. This mixture in his character of profound modesty and humility with perfect consciousness of his own place in the scientific world was remarkable. He thought very little about himself, but when he did think he thought truly and impersonally. Naturally, during his Jubilee he subtracted a great deal from himself and placed it to the count of science. [2]

Box 5. A comprehensive biography.

A mathematician of great notoriety,
Who combined scholarly excellence with piety.
He held the Chair Lucasian,
Was a Parliamentarian,
And presided over the Royal Society.

Christopher Ness, 2019.

We venture to hope that, likewise, Stokes would place this bicentenary celebration issue of *Philosophical Transactions* to the count of science.

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