BRITISH SOCIETY FOR THE HISTORY OF MATHEMATICS

# BSHM Christmas Meeting

# 11 December 2021

**University of Warwick, Coventry, CV4 7AL (locations as below)**

**PROGRAMME & ABSTRACTS**

## Programme

**Registration and Lunch in Computer Science, all other events in Mathematics**

09.30 Coffee and Registration (Computer Science Foyer)

09.55 Welcome (Sarah Hart, President)

10.00 Philip Beeley (Oxford): *'Harriot's Rule'. Some false questions of priority in 17th Century mathematics*

10.40 Tony Crilly (Middlesex, Emeritus): *Arthur Cayley's bi-centennial 2021*

11.20 Announcement of Neumann Prize Winner

11.25 Coffee

11.45 Aoife Kearins (Cambridge): *'Insert a Public Acknowledgment to Whom the Letter was Addressed': The Penny Post's Role in Mathematical Collaboration*

12.25 BSHM AGM and lunch

13.50 David Dunning (Oxford): *"Contact with Real Computing": Abstraction and Physics in Christopher Strachey's Programming Research Group*

14.30 Alex Aylward (Oxford): *Between authority and obscurity: R. A. Fisher and the mathematization of biology*

15.10 Tea

15.30 Christos Papadimitriou (Columbia): *To tell a tale of maths: Logicomix and the origins of our era* (by zoom)

16.10 Deborah Kent (St Andrews): *"Fit for making a decent observation"? Photography and the British eclipse expedition of 1871*

17.10 BSHM 50th birthday celebration

18.00 Finish

Organised jointly with the Departments of Computer Science and Mathematics, University of Warwick

## ABSTRACTS

**Philip Beeley (Oxford):** ***'Harriot's Rule'. Some false questions of priority in 17th Century mathematics***

As is well known, the enemies of Descartes gleefully took up and spread the false rumour that he had derived substantial parts of his *Géométrie* through reading Harriot, that is to say, the English mathematician's *Artis analyticae praxis*, published posthumously and confusedly by Walter Warner in 1631. Although John Wallis, Savilian professor of geometry at Oxford, was not the original source of the rumour, he did most to establish the conviction of its truth in the minds of contemporary scholars. It is less clear how far Descartes's supposed plagiarism and the surrounding discussion impacted on Harriot's scientific legacy in the Republic of Letters in the second half of the Seventeenth Century. Drawing on unpublished manuscripts and contemporary publications, the talk will seek to provide an initial answer and assessment.

**Tony Crilly (Middlesex, Emeritus):** ***Arthur Cayley's bi-centennial 2021***

Arthur Cayley (1821-95) lawyer and Sadleirian professor of pure mathematics at Cambridge is one of the most prolific researchers in the history of mathematics; his *Collected Mathematical Papers* contains 967 items. We shall consider the background to its writing, editing, composition, and the reception of its 13 volumes.

**Aoife Kearins (Cambridge):** ***The impact of the penny post on mathematical collaboration and inclusion***

In 1840, the arrival of the penny post in the United Kingdom marked a new era in communication. Businesses, families, politicians and virtually everyone else in society benefitted from the potential of this new affordable and efficient system. The value of the penny post for literacy, innovation and discovery has been well examined. However, there has been no such attempt to specifically consider how the penny post impacted mathematicians and, more broadly, impacted mathematics as a field. I argue that the penny post was one of the most significant inventions in the history of modern mathematics, and specifically consider the following three ways in which the penny post changed mathematics: collaboration, inclusion and dissemination of new problems. Firstly, I examine how the penny post allowed mathematicians to exchange thoughts and ideas quickly and easily, leading to a new spirit of collaboration in the field. Secondly, I examine how the penny post broadened access to mathematics for those from traditionally underrepresented backgrounds, namely women and the working class. Thirdly, I look at how the penny post allowed unsolved mathematical problems to spread more easily than they had done previously, leading to greater coherence in discussions of unsolved problems at the time. Ultimately, I aim to provide a framework showing the significant role the penny post played in the development of mathematics from 1840 onwards that can be built upon in future research.

**David Dunning (Oxford):** ***"Contact with Real Computing": Abstraction and Physics in Christopher Strachey's Programming Research Group***

British computer scientist Christopher Strachey denounced an artificial separation of practical and theoretical work in programming. In a widely cited quotation, he condemned most practical computing as "unsound and clumsy" for neglecting fundamental principles, while much "abstract mathematical and theoretical work is sterile because it has no point of contact with real computing." His celebrated Programming Research Group in Oxford pursued "an atmosphere in which this separation cannot happen." He thus called for computing to develop

rigorous foundations while remaining tied to the needs of working scientists. Ironically, his legacy tends in a different direction: Strachey is now regarded as a pioneer of theoretical computer science understood as an autonomous intellectual discipline. How did Strachey, himself a Natural Sciences graduate who worked for years as a physicist, come to represent such abstract inclinations? Did his group simply not adhere to the attitude he espoused, or did the "real computing" of the physical sciences in fact influence the group's increasingly abstract output? Revealing how this tension shaped the work at a crucial site in early computer science will contribute to a broader understanding of tensions between pure and applied mathematics in computing**.**

**Alex Aylward (Oxford):** ***Between authority and obscurity: R. A. Fisher and the mathematization of biology***

The reception of R. A. Fisher's 'classic' work *The Genetical Theory of Natural Selection* (1930) presents a puzzle. Standard histories of biology tell us that the book was hugely influential, having both settled the so-called 'Mendelian-biometrician' debate, and helped lay the foundations of modern evolutionary theory. Yet Fisher's book was filled with heavy-going mathematics, at a time when very few biologists possessed anything more than a rudimentary mathematical training. In this talk I'll explore how, to what extent, and in what ways Fisher's early readers engaged with the mathematical aspects of the text. I show that attention to *The Genetical Theory*'s reception and readership reveals diverse attitudes towards the increasing 'mathematization' of biology in early twentieth century Britain.

**Christos Papadimitriou (Columbia):** ***To tell a tale of maths: Logicomix and the origins of our era***

The foundational crisis in mathematics during the last decades of the 19th century led to the development of mathematical logic, and eventually to Gödel's incompleteness theorem. My talk will briefly recount this intellectual epic through the pages of Logicomix, and then proceed to the untold half of the story: How impossibility in logic spurred the formalization of computation, then -- through the ashes of yet another catastrophic war -- brought us digital computers, universality and software, and eventually ubiquitous computation and engines that learn us.

**Deborah Kent (St Andrews):** ***"Fit for making a decent observation"? Photography and the British eclipse expedition of 1871***

Nineteenth-century mathematical innovations revolutionized eclipse prediction to allow ample time for organising viewing expeditions. From the 1850s onwards, developing technologies of photography and spectroscopy offered new tools to train on open questions about the size of the universe and the chemical composition of the corona. After opportunities to observe eclipse totality in India in 1868, in North America in 1869, and in Spain in 1870, hopes ran high for additional insights in 1871. The utility of photography was particularly under scrutiny in anticipation of a much rarer Transit of Venus in 1874. The work of British observing parties in 1871 not only confirmed and extended prior results, but also gained some notoriety for an indigenous Indian astronomer and solidified the significance of photography as a research tool.