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MATHEMATICAL QUESTIONS: A CONVERGENCE OF MATHEMATICAL PRACTICES IN BRITISH JOURNALS OF THE EIGHTEENTH AND NINETEENTH CENTURIES

SLOAN EVANS DESPEAUX

ABSTRACT. — The persistence and wide-ranging popularity of the “questions and answers” genre in British journals during this period can be viewed as a convergence of two different mathematical practices: (1) the avocational, problem-solving tradition with roots in the dynamic almanac market of the eighteenth century. (2) the problem-solving tendencies and tastes of Cambridge graduates and the students of these graduates. These tendencies and tastes were encouraged through the conversion of the Cambridge Tripos to a paper-based examination at the turn of the 19th century and the subsequent diffusion of paper-based examinations throughout Britain during the second half of the 19th century. The convergence of these two practices resulted in the persistence of a particular method for mathematical communication and discovery that resisted the stratifying forces of social class, and later, professionalization. This paper will trace the “questions and answers” genre from its beginnings at the turn of

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the eighteenth century, to 1918, when the *Mathematical Questions ... from the "Educational Times"* ended.

RÉSUMÉ (Questions/réponses dans les périodiques britanniques des XVIII^e et XIX^e siècles : un genre éditorial à la croisée de deux pratiques mathématiques)

Les questions / réponses constituent un genre éditorial mathématique très populaire en Grande-Bretagne aux XVIII^e et XIX^e siècles. Ce genre peut être analysé comme réalisant la convergence de deux types de pratiques mathématiques distinctes : (1) une certaine forme d'amatorat mathématique basée sur la résolution de problèmes et qui participe du dynamisme du marché des almanachs au XVIII^e siècle (2) la tradition des problèmes courts posés aux étudiants lors de l'examen du Tripos à Cambridge. Cette tradition évolue profondément lorsque le Tripos passe d'un examen oral à un examen écrit. Durant la seconde moitié du XIX^e siècle, les problèmes posés au Tripos sont alors diffusés dans toute la Grande-Bretagne. De la convergence de ces deux pratiques a résulté une méthode spécifique de communication et de découverte mathématique. Cette méthode s'est maintenue sur le temps long malgré les dynamiques de stratification des classes sociales, et de professionnalisation des mathématiques.

Cet article analyse les évolutions du genre éditorial des «questions / réponses» de son apparition au tournant du XVIII^e siècle, jusqu'à la disparition, en 1916, des *Mathematical Questions ... from the "Educational Times"*.

1. INTRODUCTION

In an 1880 review of mathematical journalism, Cambridge mathematician J.W.L. Glaisher (1848–1928) described an evolutionary process that he considered common to all countries:

first, there is the Annual or other periodical, containing at the end puzzles, problems for solution, &c., the best solutions and the names of those who sent in correct solutions being given in the following number; at length these are supplemented by short articles on particular subjects — frequently suggested by the problems — by the leading contributors. The next step is the mathematical journal, consisting of two parts, the one containing original papers, and the other — quite distinct — containing a limited number of problems and solutions. Finally we have the strictly scientific journal, differing in no essential respect from the Transactions of a society. [Glaisher 1880, 74]

Glaisher considered Britain to have passed through all of these phases, ending with the 1865 foundation of the *Proceedings* of the London Mathematical Society. However, the establishment, activity, and dissolution of these journals was not simply a progressive, evolutionary process. As British mathematicians embraced new journal formats, they did not spurn

the previous ones. In fact, the questions and answers format, the very first step in Glaisher's progression, remained viable and popular throughout the nineteenth century.

We will trace the questions and answers genre in Britain from its non-academic, almanac-based beginnings at the turn of the eighteenth century to the end of the nineteenth century, when a mathematical journal completely devoted to this genre enjoyed support from devoted contributors who defied the boundaries being created by the processes of professionalization and stratification. The persistence and wide appeal of this genre can be attributed to a convergence of two practices: one, an avocational, problem-solving tradition dating from the eighteenth century, and the other, a taste and training for problem solving cultivated through the paper-based mathematics examinations that infiltrated all levels of British education during the nineteenth century. Three case studies will provide insights on mathematical journals from different centers of support. We will also provide contemporary evaluations of the genre and a brief overview of the presence of this genre internationally.

2. THE *LADIES DIARY* AND ITS FOLLOWERS

Almanacs gave mathematics its first foothold in the British commercial journalistic sphere. "Ready reckoners," that is, mathematical calculation aids, appeared in the almanac *Poor Robin*, which ran from 1663 to 1828.¹ General mathematical questions could be found among the "between eight and fifteen questions on the broadest range of subjects" submitted by readers and answered by the editors of the bi-weekly newspaper, *The Athenian Mercury* from 1691 to 1697. [Berry 2003, 19]² A mathematical home more substantial than *Poor Robin* and longer lived than *The Athenian Mercury* was the *Ladies' Diary*, initially established in 1704 as an almanac with articles for homemakers. However, by 1708, it had replaced many of

¹ For more on this long running almanac, see [Wardhaugh 2012a].

² For an example of some of the mathematical questions found in the *Athenian Mercury*, see [Wardhaugh 2012b, 109–113]. Berry states that John Dunton (1659–1732), the *Mercury's* editor, should without a doubt be considered the founder of the literary genre of the question-and-answer periodical. [Berry 2003, 35].