

THE MATHEMATICAL GAZETTE.

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GEORGE BALLARD MATHEWS, F.R.S.

G. B. MATHEWS was born in London in 1861, the son of a solicitor who later resided at Leominster in Herefordshire. He was educated at Ludlow School, at University College, London, and at St. John's College, Cambridge. He was equally distinguished at school in Classics and Mathematics, and was offered, on entering Cambridge, the Senior Scholarship either in Classics or in Mathematics, but in his second year he decided to read for the Mathematical Tripos. His private tutor was Mr. Besant, and he was Senior Wrangler in 1883. He had studied for a year at University College, of which he was afterwards a Fellow, and always spoke most gratefully of his obligations to the teaching of Professor Henrici.

My first meeting with him was on the 4th of June, 1884, when the staff of the University College of North Wales was appointed. We were chosen for the Chairs of Mathematics and Physics (he for Mathematics), and were at once thrown together in an intimate way. It soon appeared that Mathews' personality was a very remarkable and attractive one. He was a classical scholar and deeply interested in philosophical questions of all kinds, but his interest in experimental science was also keen. His mind was quick and his tongue sharp, and often his repartees in discussion were appropriate and caustic in a high degree. I remember his crushing reply to a person not remarkable for quickness of perception who raised a discussion on mass and weight, and advanced the statement that *mass* and *density* meant the same thing. "Not at all," said Mathews, "there is all the difference in the world between a massive intellect and a dense one!"

We quickly became intimate. Mathews got into the habit of discussing with me his ideas on all kinds of subjects; often we talked of matters which were strange and new and lay outside our ordinary lines of thought and work. His interest in literature was exceedingly keen and his taste was truly catholic. He subscribed to the London Library and read all the new books. Walking was his only exercise, and perhaps was not indulged in sufficiently.

In Mathematics his earliest predilections were for number theory and he formed an intention of writing a treatise on the subject. His admiration for the work of H. J. S. Smith was intense, and he read and re-read all that Smith ever wrote. Finally he produced a first volume on *The Theory of Numbers*, which was published by Deighton & Bell at his own expense. It dealt in the main with the Theory of Congruences, in which he brought the work of Gauss on this subject down to date. We looked for a continuation of the book, but none ever appeared; and indeed the range of work, for which it

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would have formed about the time of its appearance an appropriate introduction, had become so transformed by new papers that the introduction itself almost required transformation. Another cause of the non-continuation of his book was the fact that his mind turned to the composition of a treatise on functions of a complex variable. At that time the excellent books on the subject now available for students did not exist, and the needs of his students weighed on his mind. But treatises began to appear and his intention of writing one was never realized. The theory of functions has made much progress in the last thirty-six years, and the need of a really good text-book was then much felt.

It perhaps ought to be stated here that I have no idea of trying to estimate the value of Mathews' mathematical work. That work I have asked should be appraised by some more competent authority. But as a collaborator with Mathews, who was associated with him in many things and in many ways, I have undertaken only the melancholy duty of writing such a personal account of him as I could, leaving the professional aspect of his life-work to be dealt with by other hands.

He had a habit of taking up different subjects from time to time, burying himself in them, as it were, and reading all the literature he could find. Thus at one time he would be absorbed in the works of Archimedes. He was specially interested in the geometrical writings which he read in the original Greek, though the hydrostatic and mensurational work of the sage to me seems the more wonderful. He tackled the *Divina Commedia* of Dante in the same way, and he had read the whole of that great poem probably several times; and he would discourse with enthusiasm, which I could admire but hardly share, of the topography of *Il Paradiso*. I do not know that he gave any attention to the other works of Dante, but he certainly made a very complete study of the *Commedia*.

His knowledge of modern languages comprised, besides Italian, French and German, of course, and he had read the great romance of Cervantes, but his interest in Spain and Spanish literature arose rather through the domination of the Moors and its connection with Arabic in the Peninsula.

In the last thirty-five years of his life he gave much attention to Arabic, and was an enthusiastic student of Arabic poetry and the great Arabic grammarians. This study originated in a challenge to myself to learn Arabic. He already read Hebrew, and was thoroughly versed in the work of Wellhausen and others on the Old Testament, in which he took a keen interest. The possession of Arabic, however, seemed to promise a wider field of interest as regards the history of early Eastern peoples. Well, we equipped ourselves with Arabic grammars and vocabularies and set to work. But, so far as I was concerned, the impulse was not sufficient to keep me going, and there were too many distractions in physics and physical mathematics. So I fell out of this Arabic amusement or work, whatever we might call it; Mathews kept on by himself, and did, I believe, some rather remarkable work in translations of some of the Arabic poets which, but for the war, might have been published. He acquired a collection of Arabic books, which he left, with his mathematical library, to the University College of North Wales.

In 1896 Mathews became profoundly discouraged by the attitude of Welsh students to Mathematics, and of the students of the new Day Training Department of Teachers to himself. There was nothing that need have been taken very seriously; it was, I think, merely one of those transitory waves of feeling which arise everywhere in university life with regard to particular teachers or particular subjects, which are unworthy of the serious attention of any capable and devoted teacher, and Mathews was emphatically a man who spent himself in every possible way for his students. Some of the students had become possessed of the silly and conceited notion that the study of philosophy, especially in the Neo-Hegelian system, was a mark of genius,

while to be mathematical was to have a base mechanical turn of mind, and the absence of mathematical ability showed that their minds were "speculative" and therefore of a higher cast, and fitted them better for great careers, just as a "First in Greats" at Oxford, with its philosophical implications, was supposed to be the first step in the career of a proconsul. It is certain that, as Mathews used to remark to me, people are not ashamed of, but are rather proud of, any mathematical inability, and he wrote an article, which was published posthumously in *Nature*, on this psychological peculiarity of many groups of people (ungrateful as they certainly were in this case).

I combated as best I could his impressions and resolutions. Such fashions and feelings pass, and the views and still less those thoughtless and cruel acts, which mark the sheeplike instinct of the members of a crowd, are, if not to be absolutely ignored, not worthy to be seriously noticed, and ought not to be allowed to produce profound mental disquietude. The disappointment was too great, and he insisted on resigning, and left Bangor for a time to settle at Cambridge, where he was shortly after appointed to a University Lectureship in Mathematics. Here again his disappointment was revived. Only a very small number of men attended the lectures which, with the approval of the authorities, he undertook to give. It was not expected that the attendance on special subjects should be more than a very few: it never is. Again he retired, and finally settled down in a special lectureship in his old department at Bangor.

His life was a rather solitary one. He smoked and worked and read in his rooms when he would have been better in the open air; but he was not a mere recluse. He much enjoyed talking over current events with his friends. I remember that when he stayed with me in Strathspey in 1913 he was eloquent in appreciation of the character of Lord Kitchener, and talked with much vigour and information of all Kitchener's work for Egypt.

Mathews was exceedingly sensitive, and almost morbidly afraid of appearing to put himself forward in any way, so that he hardly received the recognition which was his due. He was elected to the Royal Society in 1897, and later served on the Council. He was also President of the London Mathematical Society, but with a fair amount of the "push" and "go" of the time, which he detested, he might have bulked much more largely in the public eye. But he was a great scholar, a great mathematician, and a great gentleman. In pure algebra there was no greater authority, and his numerous articles and reviews in *Nature*, all signed "G. B. M.," are very valuable to students and to all mathematicians. The idea of republishing these articles has been mooted, and it is to be hoped that it may sooner or later be carried out. He wrote graceful essays after the style of Charles Lamb, and one or two of these which appeared in the *College Magazine* showed much taste, and, like all he wrote, a great command of vigorous nervous English. He received the honorary degree of LL.D. from the University of Glasgow in 1915.

At the end of the war years Mathews' health became unsatisfactory, a result he himself thought of the bad quality of the food of those years. He underwent in 1919 a very serious operation, and his friends thereafter were gravely concerned regarding him. He recovered partially from the disease, and hopes were entertained that a certain course of treatment would bring about a permanent cure. On March 19 he sustained a seizure, and died in the Nursing Home in Liverpool, in which he had spent the closing months of 1921 and the beginning of this year.

I have now, and very imperfectly, carried out my task, and have given, I hope, an account of perhaps the most intimate friend I ever had to which he himself would not have taken grave exception.

A. GRAY.