

OBITUARY NOTICES.

WILLIAM HENRY BESANT.

WILLIAM HENRY BESANT was born at Portsea, Hauts, on the first of November, 1828. He was the son of William Besant, of Portsea. He received his early education at the Grammar School at Portsea and at a Proprietary School at Southsea. He came up to St. John's College, Cambridge, as a Sizar, at the age of seventeen, and was Senior Wrangler and First Smith's Prizeman in 1850, when he was twenty-one. The popular coach and the maker of Senior Wranglers in those days was Hopkins, but Besant was coached by Stephen Parkinson, a member of his own college. Judged by modern standards, his knowledge of mathematics on entering the University was probably not extensive, for there is among his papers a small bound note book containing the notes that he made as an undergraduate, in 1847, of "Lectures on Trigonometry", by Mr. Griffin, and of "Sadleirian Lectures, 2nd Term" on Algebra, by Mr. Blackall; which shows the kind of work that was expected of a freshman reading for the Mathematical Tripos in those days. The notes of each lecture take the form of from six to ten questions, to some of which the solutions are given. The Trigonometry lectures evidently assumed little or no previous knowledge of the subject, and begin with the definition of an angle; but the Algebra course, in its second term, was more advanced, and included some elements of continued fractions and the theory of probability.*

Besant was elected to a Fellowship in 1851, and was appointed Lecturer in Mathematics at St. John's, in 1853, an office which he held for 35 years. He vacated his Fellowship on his marriage, in 1859, but was re-elected in 1889. He acted as Moderator and Examiner for the Mathematical Tripos in 1856, 1857, and 1885. He examined for the Smith's Prizes in 1859, was Examiner in the University of London for the five years 1860-64; and for many years examined in the Indian Civil Service Competition. He was elected a Fellow of the Royal Society in 1871, and, along with Dr. Routh, was one of the first Members of the University

* It is interesting to record that some years earlier it was possible to obtain a high place in the Tripos, starting as a freshman, with very little previous knowledge of mathematics. The late William Walton,} who was Eighth Wrangler in 1836, once told the writer that he only began Euclid when he entered the University.

to take the newly instituted degree of Sc.D. in 1883. He held the office of Esquire Bedell from 1866 to 1870.

But it is as a private tutor that Dr. Besant will be best remembered. For many years he shared with Dr. Routh deserved popularity as a coach, and won the esteem and affectionate regard of many generations of pupils. He was an indefatigable worker, at times beginning his daily round with pupils at 7 a.m. His method of teaching consisted for the most part in getting his pupils to copy manuscripts which he had prepared, and to write answers to series of bookwork and rider papers on all the subjects of the Tripos—papers of which he kept a few copies only in manuscript. He also set a weekly problem paper, and it was his habit to look over all the written work of his pupils between the coachings, which took place three times a week, before discussing it with them. As the number of his pupils must often have been as many as fifty or sixty he could not, but for the fact that he was a very rapid worker, have kept pace with all that he had to do. He was equally at home with all branches of mathematics, and always ready to discuss any sort of difficulty and to encourage his pupils to develop new ideas.

In the days of the undivided Tripos the skill of a coach lay in guiding his men to the best use of their time, as it was not possible for them to “read” or know all the subjects in the schedules, and to guide them wisely needed great judgment.

Besant’s method as a lecturer in the early seventies was to dictate some ten or twelve problems from recent examination papers, and then after an interval go round and see how the class were getting on. He never solved anything for a pupil himself, but only suggested a start, or pointed out an error. He was always anxious that men should try geometrical as opposed to analytical methods, and he used to impress upon his class the usefulness of elementary subjects from the point of view of the examination. He was always kind and urbane, and, if you had a difficulty which you could explain to him, he always helped you, so that, in days when College lectures were of no great account, Besant’s stood out as among the best.*

He wrote a number of textbooks, some of which are still in use, though more than fifty years have passed since they first appeared. Some of these were put together in a few weeks while on a holiday; this was so, I believe, with his first book, the *Hydromechanics*, which was first published in 1859. His most original work, which showed his great powers as a Geometer, was the *Notes on Roulettes and Glissettes*, which came out in 1870, probably the only mathematical book that has ever received a notice in *Punch*. Of this fact Besant was justly proud, for the work was his own, even to the word

* For the facts in this paragraph, and for some other details, I am indebted to the kindness of the Master of St. John’s College.

“Glissette”, which he invented, and he had the cutting from *Punch** pasted into his own copy. Besant always interested himself in the nomenclature of mathematics. The word “orthocentre” was invented by him and Ferrars while walking on the Trumpington Road, about the year 1865; and, after consulting many classical scholars, he endeavoured† to substitute the word “Phoronomy” for “Kinematics”, but the latter was too firmly established to be changed.

His contributions to mathematical journals were mainly published in the *Quarterly Journal* and the *Messenger* and include “Note on Flexible Surfaces”,‡ “The Equations of Equilibrium of a Bent Lamina and of an Inextensible Membrane”,§ “Metacentre”, and “Tension of Flexible Surfaces”,|| and a number of notes on Dynamics and Geometry. The amount which he wrote for publication would doubtless have been much greater had not so much of his time been devoted to his pupils. At the time when he gave up active work he had the manuscripts of textbooks on several subjects almost ready for publication, compiled from notes which he had prepared for pupils, but, feeling doubtful whether they would be appreciated, he destroyed them. The sum total of all the writing which he did for his pupils was prodigious. When he gave up his rooms in St. John’s, about 1902, he presented to the writer a volume of Problem Papers. It was a second volume, and entitled *Some of the Problem Papers set to Pupils between 1860 and 1896*. It contains 105 problem papers, with an average of fifteen problems to each paper, and was accompanied by the solutions in manuscript, all neatly arranged and labelled, and forming a pile of papers fourteen inches high. The solutions are always elegant, and, especially in questions on Geometry and Dynamics, alternative solutions are frequently given, and the problems are made to illustrate as many principles as possible. Many of the questions would now be regarded as old-fashioned and altogether unsuitable for use, but they have served their day and answered their purpose. Modern undergraduates spend much less time in working problem papers than did the pupils of Besant, who was a firm believer in the mathematical traditions of the Victorian era, and

* *Punch*, 2nd April, 1870 :

WHAT CAN THEY BE?

Notes on Roulettes and Glissettes. — This sounds rather frisky for the title of a book by a “Lecturer and late Fellow of St. John’s College, Cambridge”, and we should feel easier as to the future of St. John’s College, if we could receive an assurance from the College Authorities that they have examined the work in question and can vouch for its being of the highest respectability.

† *Nature*, 17th March, 1892.

‡ *Quarterly Journal*, Vol. III, p. 68, 1860.

§ *Quarterly Journal*, Vol. IV, p. 12, 1861.

|| *Quarterly Journal*, Vol. VIII, pp. 35 and 75, 1867.

strenuously opposed the abolition of the order of merit in the Tripos lists ; though, when the reform at length came, he withdrew his opposition in view of the weight of opinion in favour of it.

Always busily occupied until his later years, Besant was a man of wide interests. He was a good classical scholar in his youth, and had some artistic gifts and a fondness for sketching. A man of great geniality and good humour, his relations with his pupils were always of the pleasantest nature. Always interesting and interested, he had a fund of amusing anecdote and used to delight, in his latter days, in memories of the mathematicians of the past.

He died on 2nd June, 1917, in his eighty-eighth year.

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