

**MEMORIAL RESOLUTION FOR  
PROFESSOR EMERITUS J.H.H. CHALK  
(1922-2004)  
DEPARTMENT OF MATHEMATICS**

**BE IT RESOLVED THAT** the Council of the Faculty of Arts and Science deeply regrets the death of Professor Emeritus J.H.H. Chalk of the Department of Mathematics, at the age of eighty one.

John Henry H. Chalk joined the Department of Mathematics at the University of Toronto on July 1, 1960. Already at that time John was a well-established researcher with many papers to his credit. He brought strength in Number Theory to the department, creating a stimulating environment in his field.

In 1964, two number theorists were appointed to the department, Hans A. Heilbronn and Robert A. Smith. John Chalk collaborated with Bob Smith which resulted in a paper “On Bombieri’s estimate for exponential sums”. John Chalk, Bob Smith, and Hans Heilbronn, all three were interested in exponential sums. There is a conjecture of John Chalk on this subject which is still alive. In 2001, T. Cochrane and Zh. Zheng published a paper “On the upper bounds of Chalk and Hua for exponential sums” and several articles on ‘Chalk’s conjecture’ appeared in the 1990s. There are also a number of articles in the mathematical literature dealing with ‘Heilbronn’s exponential sum’.

John Chalk’s research career spanned some fifty years and resulted in more than fifty publications, many in journals of excellent reputation. He achieved results in a wide range of central topics within Number Theory. In his earlier years, he was primarily concerned with questions involving the values of linear and higher degree forms and other problems related to the Geometry of Numbers. Subsequently, he broadened his area of interest. It now included topics in Diophantine Approximation, the solution of Diophantine Equations and, in particular, an interesting generalization of Pell’s equation which later led him to a study of quaternion algebras. He was also attracted by some problems that arise in Fuchsian groups. In the later years of his career, John concentrated on estimates for a variety of exponential and character sums and on the not unrelated question of counting accurately the number of solutions of polynomial congruences.

Robert Vaughan sheds some light on John Chalk’s depth and attitude towards research when Robert writes in a recent letter, “I remember him describing to me various ways in which things might be taken quite a bit further, and with fundamental consequences. In fact, even now it suggests several things to me which really need to be investigated”.

John Chalk’s career as a research mathematician had an auspicious beginning. He earned two Ph.D. degrees, one from UC London and one from Cambridge, under the supervision of H. Davenport, L.J. Mordell, and E. Artin, three of the most outstanding researchers in their fields. John was a Postdoctoral Fellow at Princeton.

During His tenure in Toronto, John received distinguished awards, among them a Scientific Exchange Fellowship Canada-France and a D.S.I.R. Fellowship from the United Kingdom. These enabled him to go on extended visits to the Faculté des Sciences in Paris, the University College, London, and several other universities in Britain and France. He was no stranger at the famous Forschungsinstitut at Oberwolfach in Germany. John was awarded a D.Sc. from London in 1987 and a Sc.D. in 1988 from Cambridge. He was a long-time member of the London Mathematical Society.

John served the Canadian mathematical community in various ways. Prior to accepting the position at the University of Toronto, he spent three years with the Mathematics Department at McMaster University in Hamilton. For several years, he was the Editor of the Canadian Journal of Mathematics. John Chalk was well known and internationally respected for his work. This resulted, in particular, in his election as a Fellow of the Royal Society of Canada in 1973.

John Chalk was a very pleasant colleague. He was also an excellent lecturer and teacher. His clear and accurate notes were much appreciated by his students. He supervised six Ph.D. students. Their theses eventually resulted in a dozen publications in scientific journals. Robert Vaughan of the University of Pennsylvania, now a very prominent analytic number theorist, was inspired to go into research in number theory after he took his first course on the subject from John Chalk at University College, London, where John spent a sabbatical. Colleagues and students alike appreciated John's quiet ways, his genuine interest in their work, and his fine sense of humour.

John remained in mathematical research till long after his retirement from the University of Toronto in 1988. For at least ten years he was an Imperial College Senior Fellow in London, lecturing and attending lectures regularly at Cambridge and London. He spent six months in Vienna at the Technische Universität with Peter Gruber and gave several lectures in French at the University of Caens while visiting Yves Hellegouarche.

John H.H. Chalk was born on September 13, 1922 in London, England, where he grew up and received most of his formal education. He died in Vancouver, B.C., on June 28, 2004. He leaves his wife, Geraldine, and his two sons and their families. John's ashes will be taken to England to the Malvern Hills in the West Country where his mother came from.

**BE IT FURTHER RESOLVED THAT** this resolution be inscribed in the Minutes of the General Committee of the Council and that copies be sent to his wife, Mrs. Geraldine Chalk, as an expression of the Committee's sympathy, respect, and appreciation.

Erich W. Ellers