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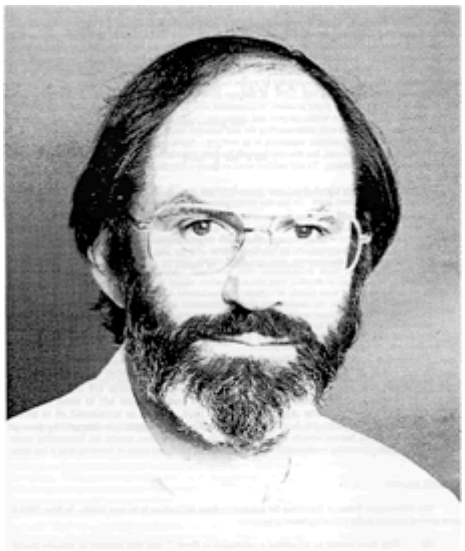
CENTREFOLD

Professor Peter James Lorimer



Peter Lorimer was born in Christchurch and studied at the University of Auckland and at McGill University in Montreal. After obtaining the PhD degree from McGill, he held lectureships there and at the University of Canterbury. He moved to Auckland as a Senior Lecturer in 1966 and was promoted to an Associate Professorship in 1973. He has also held visiting positions in a number of overseas universities.

Peter's research has been in group theory, projective geometry and combinatorics. In addition to his research and teaching, he has played many important roles in the development of Mathematics in New Zealand. He is a strong advocate of such curriculum reforms as would render Mathematics more accessible to a wide range of student abilities and interests. He is also a strong supporter of the principle that Mathematics and its applications are intimately connected and should be taught in relationship with each other.

Peter played a central part in the planning leading up to the formation of the New Zealand Mathematical Society. After the Society was formed he continued to play an active role and in particular has served as a council member and treasurer.

His work in the theory of groups ranges from abstract questions about the structure of groups to applications of group theory especially to geometry. Groups, especially those with a finite number of elements, have been studied intensively for the last 50 or 60 years. Peter Lorimer's contribution to this subject began with his doctoral thesis at McGill and continued over the next decade. During this time of active publication on group theory, he became increasingly interested in finite projective planes and also started making contributions to this area.

It is well known that for each prime number p and positive integer n, there exists a projective plane of order p^n, but it is extremely difficult to determine which other numbers are possible as orders of projective planes. Furthermore, the classical projective planes are based in a simple way on the properties of Galois fields, and it is an interesting and difficult question

whether other types of planes of order p^n might exist. Peter Lorimer has made important discoveries relating to both of these questions. A famous piece of research by him deals with so-called translation planes of order 16. The most important and interesting plane of this type was discovered and studied by him and eventually led to the classification of all planes of this type and order.

The mathematician D R Hughes, in the middle fifties, classified projective planes in terms of a pair of integers. Although planes of the types (4, *m*) and (5, *m*) were already known, Peter Lorimer was the first to discover a plane of the type (6, *m*). In his plane $m = 2$, and he later also proved that no plane of type (6, *m*) exists with m greater than 3 (but, as it happens, no plane with $m = 3$ has yet been found). The discovery of a plane of type (6, 2) is regarded as a particularly significant event amongst people working in this part of combinatorics, and it has led to a wealth of activity amongst many mathematicians throughout the world.

Other aspects of algebra, graph theory and combinatorics in which Peter Lorimer has made important contributions include the theory of Ramsey numbers. Ramsey's theorem is one of the central ideas in modern 4-graph theory, establishing the existence of a smallest graph of a certain type under a wide variety of possible conditions. The complexity of this smallest graph is known as a Ramsey number. While it always exists, its actual value is generally not known. Of the relatively few situations where a Ramsey number is known explicitly, many were discovered by Peter Lorimer in collaboration with Professor E J Cockayne of the University of Victoria in Canada.

During the last seven or eight years, a further interest of Peter Lorimer has been the study of symmetric graphs. Exploiting a description in terms of double cosets of groups, he has been able to describe graphs of prime valency in terms of the finite simple groups. This has enabled him to describe the seven types of symmetric cubic graphs in a systematic way and, in collaboration with the young Auckland mathematician Dr M D E Conder, he has been able to resolve a number of outstanding questions about these graphs.

In May 1988, Peter Lorimer was elected a Fellow of the Royal Society of New Zealand. Not many workers in the Mathematical Sciences are at present represented in this Society, and in its entire history, the number of Pure Mathematicians gaining this distinction has been a mere handful. In describing Peter's life and work in this newsletter, the New Zealand Mathematical Society associates itself with the recognition of his achievements by the Royal Society of New Zealand.

J C Butcher