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Preface

The international Symposium on algebraic topology which was held in Manchester in July 1990 was originally conceived as a tribute to Frank Adams by mathematicians in many countries who admired and had been influenced by his work and leadership. Preparations for the meeting, including invitations to the principal speakers, were already well advanced at the time of his tragic death in a car accident on 7 January 1989, at the age of 58 and still at the height of his powers.

Those members of the Symposium, and readers of these volumes, who had the good fortune to know Frank as a colleague, teacher and friend will need no introduction here to the qualities of his intellect and personality. Others are referred to Ioan James's article, published as *Biographical Memoirs of Fellows of the Royal Society*, Vol. 36, 1990, pages 3–16, and to the Memorial Address and the Reminiscences written by Peter May and published in *The Mathematical Intelligencer*, Vol. 12, no. 1, 1990, pages 40–44 and 45–48.

We, the editors of these proceedings, were both research students of Frank's during his years at Manchester, As might be imagined, this was a remarkable and unforgettable experience. There was inspiration in plenty, and, on occasion, humble pie to be eaten as well. The latter became palatable as we learned to appreciate that the vigour of Frank's responses was never directed at us as individuals, but rather towards the defence of mathematics. In fact we both discovered that when suitably prompted, Frank was astonishly willing to repeatedly explain arguments that we had bungled. He also provided warm and understanding support, friendship and guidance far beyond his role as research supervisor.

This was an exciting period for Manchester, where Frank's influence was admirably complemented by Michael Barratt, and for algebraic topology in general. When he came to Manchester in 1962, Frank had just developed the K-theory operations he used to solve the problem of vector fields on spheres. In the years that followed he developed his series of papers on $J(X)$, and regularly lectured on subject matter which eventually became his Chicago Lecture Notes volume "Stable homotopy and generalised homology".

Our opening article, by Peter May, describes these and other achievements in more detail, and forms in a sense an introduction to the whole of the book. Although some attempt has been made to group papers according to the themes which May identifies, we cannot pretend that anything very systematic has been attained, or is even desirable. Most of the contributions here are based on talks given at the Symposium, as the reader will see by consulting lists on pages xi–xii. Aside from this, we feel it sufficient to remark that all the articles have been refereed, and that every attempt has been made to attain a mathematical standard worthy of association with the name of J. F. Adams – with what success we must leave the reader to judge.

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We also hope that the Symposium itself might be seen as a significant tribute to his philosophy and powers. In keeping with his views on the value of mathematics in transcending political and geographical boundaries, we were fortunate to attract a large number of participants from many countries, including Eastern Europe and the Soviet Union.

In conclusion, we would like to thank the many organisations and individuals who made possible both the Symposium and these volumes.

The bulk of the initial funding was provided by the Science and Engineering Research Council, with substantial additions being made by the London Mathematical Society and the University of Manchester Research Support Fund. Support for important peripherals was given by the NatWest Bank, Trinity College Cambridge, and the University of Manchester Mathematics Department and Vice-Chancellor's Office. We would especially like to thank John Easterling and Mark Shackleton in this context.

During the Symposium our sanity would not have survived intact without the able assistance of all our Manchester students and colleagues in algebraic topology, and most significantly, the fabulous organisational and front-desk skills of the Symposium Secretary, Jackie Minshull. And the high point of the Symposium, an ascent of Tryfan (Frank's favourite Welsh Peak), would have been far less enjoyable without the presence of Manchester guide Bill Heaton.

Mrs Grace Adams and her family were most helpful in providing photographs and other information, and were very supportive of the Symposium despite their bereavement.

The production of these volumes was first conceived by the Cambridge University Press Mathematical Editor David Tranah, and their birth pangs were considerably eased by his laid-back skills. Our referees rose to the task of supplying authoritative reports within what was often a tight deadline. We should also thank those authors who offered a manuscript which we have not had space to publish.

Finally, we both owe a great debt to our respective families, for sustaining us throughout the organisation of the Symposium, and for continuing to support us as its ripples spread downwards through the following months. Therefore, to Sheila Kelbrick and our daughter Suzanne, and to Wendy Walker, thank you.

These volumes are dedicated to Frank's memory.

Nigel Ray Grant Walker

University of Manchester
September 1991

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F. Morel	The representability of mod p homology after one suspension.
E. Ossa	Vector bundles over loop spaces of spheres.
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H. Sadofsky	The Mahowald invariant and periodicity.
R. Schwänzl	Hermitian K-theory of A_∞-rings.
K. Shimomura	On a spectrum whose BP_*-homology is $(BP_*/I_n)[t_1, \ldots, t_k]$.
V. P. Snaith	Adams operations and the determinantal congruence conjecture of M.J. Taylor.
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T. Bisson: Covering spaces as geometric models of cohomology operations.

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J. M. Boardman: Group cohomology and gene splitting.

P. Booth: Cancellation and non-cancellation amongst products of spherical fibrations.

C. Casacuberta and M. Pfenniger: On orthogonal pairs in categories and localization.

S. Edwards: Complex manifolds with c_1 non-generating.

V. Franjou: A short proof of the $\mathcal{U}$-injectivity of H^*RP^∞

V. G. Gorbunov: Symplectic bordism of projective spaces and its application.

T. Hunter: On Steenrod algebra module maps between summands in $H^*((Z/2)^s; F_2)$.

K. Ishiguro Classifying spaces of compact simple Lie groups and p-tori.

N. Iwase: Generalized Whitehead spaces with few cells.

M. Kameko: Generators of $H^*(RP^\infty \times RP^\infty \times RP^\infty)$.

S. Kochman: Lambda algebras for generalized Adams spectral sequences.

I. Leary and N. Yagita: p-group counterexamples to Atiyah's conjecture on filtration of $R_C(G)$.

A. T. Lundell Concise tables of homotopy of classical Lie groups and homogeneous spaces.

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G. Moreno: Lower bounds for the Hurewicz map and the Hirzebruch Riemann-Roch formula.

R. Nadiradze Adams spectral sequence and elliptic cohomology.

N. Oda: Localisation of the homotopy set of the axes of pairings.

A. A. Ranicki: Algebraic L-theory assembly.

N. Ray: Tutte algebras of graphs and formal groups.

J. Rutter: The group of homotopy self-equivalence classes of non-simply connected spaces: a method for calculation.

C. R. Stover On the structure of $[\Sigma\Omega\Sigma X, Y]$, described independently of choice of splitting $\Sigma\Omega\Sigma X \longrightarrow \bigvee_{n=1}^{\infty} \Sigma X^{(n)}$.

P. Symonds: A splitting principle for group representations.

Z. Wojtkowiak: On 'admissible' maps and their applications.

K. Xu: Representing self maps.

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