

## OBITUARY

JACK HOWLETT



JACK HOWLETT, 1912–1999

Dr Jack Howlett, who died on 5 May 1999 at the age of 86, a Founder Fellow of the Institute of Mathematics and its Applications, was a mathematician with a special interest in numerical analysis who early recognised the power of computing methods and who strongly influenced the development of some mechanical computing machines and electronic computers as we know them today. The widespread advance of the use of computer models in all scientific disciplines was made possible thanks to the efforts of a small number of mathematicians who laid the foundations of modern numerical analysis during the late 1930s to early 1960s, a period which covered the greater part of Jack's working life and in which he was a star player.

Jack Howlett was born in Manchester on 30 August 1912 and, after attending Stand Grammar School, took a Mathematics degree at Manchester University, where he also obtained his PhD. Until the War he worked in the Research Department of the London, Midland and Scottish Railway, where he introduced the engineers to the benefits of computation and analysis. Of this period he once said 'You have to be pretty confident of your calculations when they wheel out an enormous locomotive onto a trial bed', and then added a comment on the feeling of relief 'when it leaves the rails within 1% of your calculated value'.

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*Bull. London Math. Soc.* 33 (2001) 113–115

From 1940 to 1946 he worked on a variety of mathematical problems connected with wartime activities, as a member of a small group at Manchester University headed by Professor D. R. Hartree. It was this group that pioneered the building of a mechanical differential analyser, an analogue machine which was probably the most powerful of its type in Europe at the time. The group carried out some large-scale calculations relating to the atomic bomb project. Jack never went into the details of this except for a remark that he had found an asymptotic solution to a major problem for Rudolph Peierls (and Klaus Fuchs!), and that it had been a significant contribution. As a result of his wartime work, Jack was asked to take charge of the Computing Section in the Theoretical Physics Division at AERE, Harwell, in 1948. Originally intended to serve only the Division's needs, the Section soon expanded its services to cover the whole Establishment as the universal need for computation was realised. After a series of early computers, including some built in house, Harwell acquired a Ferranti Mercury in 1958. But the technology was moving ahead rapidly and this led Jack into playing a leading part in the decision by Manchester University and Ferranti to collaborate on the design and construction of the Atlas Computer, a very powerful machine, comparable to any other at that time and with several original features including paging and read-only store which other manufacturers later incorporated into their machines. After much discussion it was agreed that an Atlas 1 should be installed at Harwell, but under the control of the National Institute for Research in Nuclear Science (NIRNS) and outside the security fence so that University users, as well as those from the Research Councils and Harwell itself, could have access. As a consequence, the Atlas Computer Laboratory was founded in 1961 and Jack became its Director. He insisted on building a computation laboratory around the computer, and in this he gained powerful support. The Atlas Laboratory thus not only provided computing power and services but had a programming group and a small group of Research Fellows, who were appointed jointly with a number of Oxford colleges. Jack later wrote: '... all experience has confirmed the view with which the Laboratory started out, that the presence of research activities in the building, and easy contacts with the academic world and with other computer centres, are essential to the intellectual health of the Laboratory'. The fellowships attracted large numbers of highly-qualified applicants, many of whom, such as Jack Good, Ian Grant and Joan Walsh (the first holders of the Trinity, Pembroke and St Hilda's Fellowships), were subsequently appointed to chairs in mathematics. University computing facilities in the early 1960s were very heterogeneous, with a variety of machines including the KDF 9, Elliot 803, Ferranti Pegasus and Mercury and Atlas Computers (at Cambridge, London and Manchester). Programs for various major research programmes, such as crystallography, were being written in several places independently. The Laboratory played a key role in bringing order into this by acquiring Fortran packages such as X-Ray 63, and by providing the powerful computing resources required, and the Flowers Committee in 1966 encouraged such collaboration further by bringing order and compatibility into the provision of University computers. Outside the University sector, an early major collaboration with the Meteorological Office led to the development of the weather forecasting model which forms the basis of the present computer-based forecasts.

With a widespread set of users for practically all universities and disciplines, the Laboratory, under Jack's direction, became known internationally, and a steady stream of distinguished scientists, engineers, economists, linguists and others from the UK and overseas, as the Visitors' Book shows, came to use the facilities and discuss

their problems. The atmosphere in the Laboratory was inspiring and enjoyable, and was very much appreciated by the staff and visitors, every one of whom was important in Jack's eyes; he knew everyone by name, and was loved and respected by all. To have been a member of the Laboratory was a privilege. One visiting American academic said 'It's like Shangri-La', and, at times, that is how it seemed.

Jack retired in 1975, but continued to be active in the computing world. He was Chairman of the National Committee on Computer Networks, and worked as a consultant to ICL as well as editing the ICL Technical Journal. From 1977 to 1983 he collaborated with Dr Kenneth Beauchamp of Lancaster University in setting up and running in succession a series of NATO Seminars in France, at Bonas near the Pyrenees. These were part of the programme of the NATO Advanced Study Institute, and were devoted to 'Information Technology and the Computer Network'. These were held at a time when networks were beginning to spread, and Jack was, yet again, in the forefront. In France, at Bonas, as a linguist and lover of good food and wine, he was in his element. His command of French was such that he translated books on computing from French for many years after his retirement.

When he took time off he liked to walk in the Lake District and Yorkshire, and to indulge his love of music and the arts. To share some of this enthusiasm was a great joy to many, and he would talk about the unaccompanied violin works of Bach or the paintings of Renoir. He lived and worked through a historic period in computing, and has left those of us who knew him with a sense of gratitude for making life that much more interesting.

Jack received numerous honours. He was appointed CBE in 1969, was a Fellow of St Cross College, Oxford, from 1966, and was awarded the 1300th Anniversary Medal of the Bulgarian State in 1982. In addition to being a Fellow of the IMA, he was a Fellow of both the British Computer Society and the Statistical Society, and a Member of the London Mathematical Society (for 64 years!) and the IEE.

He married Joan in 1939; she survives him together with their four sons and daughter.

ACKNOWLEDGEMENT. This notice appeared in *Mathematics Today*, Volume 35, Number 4, and is reprinted by kind permission of the Institute of Mathematics and its Applications.

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