

**FIREWORKS – PRINCIPLES AND  
PRACTICE 4<sup>th</sup> Edition**

**Rev R Lancaster MBE**

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The name of Ronald Lancaster has been synonymous with the British Fireworks Industry for the past forty years or so and his firm, Kimbolton Fireworks, has been responsible for many of the major displays staged in the UK since 1980. The fourth edition of *Fireworks – Principles and Practice* is the current, and perhaps final, stage in the evolution of a book that was first published in 1972.

When the first edition made its appearance, there was relatively little in the way of published material in respect of fireworks manufacture (certainly in the UK). The book was therefore seen as a natural successor to classic texts such as Weingart's *Pyrotechnics* (1947). Over the past twenty years or so, there has been an explosion (sic) in the number of publications dealing with both fireworks and pyrotechnics, at both practical and theoretical levels. However, Lancaster's book still has its place and the 4<sup>th</sup> edition is a further refinement on its predecessor, which appeared in 1998.

*Principles and Practice* is presented in a traditional format, with twenty-three chapters covering all aspects of fireworks manufacture, technology, history, and display techniques. In common with all three previous editions, there are contributions from other well known individuals – particularly Tom Smith and Darryl Fleming – whose areas of speciality (legislation and display practices respectively) give added weight and authority to the book. Ronald Hall's name no longer appears in the list of contributors, as Ron Lancaster significantly revised the chapter on Rockets in the previous printing.

The fourth edition differs from the third in a few important respects. There has been a general revision and refinement of the text, a significant improvement in the number and quality of diagrams and illustrations, and a fascinating introductory chapter entitled *Sixty Years' Love of Fireworks*

– *Diamonds in The Sky*. This is the author's personal reflection on a lifetime in fireworks; it is a delightful and evocative piece of work. To say that it is long overdue is rather crass; after all, the right time to pen a worthwhile biography is in your twilight years, with all the benefit of hindsight (although it is not uncommon for modern footballers to record their life history well before arriving at their thirtieth birthday!). Lancaster takes us back to pre-war days in Yorkshire, where his passion for fireworks was kindled, and then develops the chapter by recalling his time with Pains–Wessex before taking the huge step of developing Kimbolton Fireworks as an entity in its own right. In forty pages or so, the reader is given an insight into a little personal, social and industrial history – which is of great value. Chapter 1, *The History of Fireworks*, by Roy Butler has not changed significantly since the previous edition, but is still an excellent survey of the development of fireworks manufacture. It is supported by some rather nice images of display rigging and factory production relating to Brocks' activities in the 1930s.

Taking *Principles and Practice* as a whole – from the outset, the author's philosophy was to produce a textbook that adopted a 'broad-brush' approach. As a result, all of the key areas involved in general firework manufacture are covered in reasonable depth, without immersing the reader in minute detail. Take the design and construction of cylinder shells, for example. This is covered in just a few pages within chapter 16, whereas one could devote a whole chapter to do justice to this specialised area of shell manufacture. Lancaster covers the basics more than adequately, and refers the reader to more comprehensive works on the subject – a sensible approach that is adopted throughout.

Chapter 8 concerning *Mixing and Charging* is a nice example of how Lancaster's book has evolved since its first printing in 1972. While the basic content has remained the same, the chapter benefits from improved diagrams (some of which are now 3D), a series of new photographs (the Pains–Wessex images having been replaced by equivalent pictures from the Kimbolton factory), and the author's personal opinions on the current state of play. Lancaster does not pull any punches when it comes to his assessment of contemporary

approaches to health and safety. As an ordained Anglican minister, he is able to draw on a source of 'higher authority' and does so from time to time, with amusing results. Bemoaning the excesses and complexity of modern health and safety management, Lancaster quotes from the Bible - Luke XI verse 46 "Yes, you Lawyers and Pharisees, you load men with intolerable burdens and will not put a single finger to lift the load." Quirky inclusions such as this add a touch of mild eccentricity, at the same time enhancing its appeal as a work of unique style.

The key 'technical' chapters of the book, as with previous editions, cover all fundamental aspects of fireworks manufacture and deal with individual types; rockets, shells, roman candles, fountains and so on. Each chapter is comprehensive enough to provide a good basic grounding in the functional principles, with a strong practical emphasis throughout. The framework of the book has not changed significantly, in this respect, compared with the 3<sup>rd</sup> edition. Basic firework chemistry is also dealt with in a clear and concise fashion – providing an excellent grounding in the subject, borne out of the author's own experience.

The 4<sup>th</sup> edition of *Principles and Practice* does contain a number of errors – mainly textual and typographical, many of which appear in the glossary. These do not detract from the overall quality of the publication, but need to be addressed in any future printings. A couple of important 'chemical' errors have also been identified and the author has already produced a list of corrections.

Ron Lancaster has never needed to strive to establish his credentials as an authority in the field of fireworks. His research and development work has won him considerable respect and Kimbolton's achievements in the display forum speak for themselves. *Principles and Practice* has grown alongside Ron Lancaster's reputation; both author and publication have now reached full maturity and the 4<sup>th</sup> edition of this already 'classic' text will consolidate Lancaster's position as a key figure in the history of fireworks manufacture. This latest version should be in the library of anyone who has a serious interest in the subject – whether that be from a technical or historical perspective, or both!