Review of Ian von Maltitz's *Black Powder Manufacture Methods and Technique*

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In this book, Mr. von Maltitz has compiled a wealth of historical data about black powder, descriptions of commercial and amateur production methods, equipment, ingredients, formulae, and even comparative performance data. Probably nowhere else is so much basic information about this most fundamental of pyrotechnic mixtures, and many of its relatives, available in a single volume. Please note, however, that this is mainly a practical guide for the amateur. Those seeking scholarly analyses of the chemistry, physics, or thermodynamics of black powder should look elsewhere.

The book opens with an introductory chapter on safety, and this responsible approach is very welcome. Specifically directed toward the hobbyist, many of the suggestions are still good reminders for all who handle pyrotechnic mixtures in any capacity. The emphasis on keeping batches small, sticking to the safer methods, equipment, and procedures, and giving forethought to the possible consequences of an accident is wise counsel. If followed, this advice should help to reduce both the physical and social dangers inherent in this sort of experimentation. Despite these cautions, however, it is rather disappointing to see references later in the book to methods that involve heating mixtures "on a kitchen stove". The author does suggest that they be done outdoors, but the point deserves greater emphasis. For many reasons, both legal and practical, operations of this sort ought never to be conducted in a residence.

The author's discussion of methods for the small-scale production of black powder is particularly useful to the hobbyist, for these methods provide an economical route to lift powder for shells and other applications. The descriptions of these processes—some of which are rather complex—are as exhaustive as the processes themselves are varied. Test results, by which the products' performance may be compared, are provided for many of the methods. Detailed descriptions of several easy tests are also provided for those who may wish to make their own comparisons.

One chapter is largely devoted to black powder substitutes and related compositions. Few, if any, of these oddities will be useful to the serious pyrotechnist, and some of them—as the author warns—should definitely be avoided. However, their inclusion does provide interesting insights into the wide variety of mixtures devised, improvised, and used over the years for various purposes, and with varying degrees of success.

A number of appendices detail several historic processes for producing military black powder, describe a trip through Goex's Moosic, Pennsylvania plant, provide specifications for commercial black powder, and give useful data on lift charges for various types of aerial shells.

All in all, this book is a readable and useful compendium which should be of interest to a wide audience. It is a worthwhile addition to any pyrotechnic library.