

**SHRAPNEL SHELL
MANUFACTURE: A
COMPREHENSIVE TREATISE ON
THE FORGING, MACHINING, AND
HEAT-TREATMENT OF SHELLS**

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Shrapnel Shell Manufacture: A Comprehensive Treatise on the Forging, Machining, and Heat-Treatment of Shells by Douglas T. Hamilton

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DOUGLAS T. HAMILTON

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MANUFACTURE**

MACHINERY



THE MACHINERY OF THE FUTURE

BY J. H. BURNETT

WITH ILLUSTRATIONS BY J. H. BURNETT

AND A. H. BURNETT

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SHRAPNEL SHELL MANUFACTURE

A COMPREHENSIVE TREATISE ON THE FORGING,
MACHINING, AND HEAT-TREATMENT OF SHELLS,
AND THE MANUFACTURE OF CARTRIDGE CASES
AND FUSES FOR SHRAPNEL USED IN FIELD
AND MOUNTAIN ARTILLERY, GIVING COMPLETE
DIRECTION FOR TOOL EQUIPMENT AND METHODS
OF SETTING UP MACHINES, TOGETHER WITH
GOVERNMENT SPECIFICATIONS FOR THIS CLASS
OF MUNITIONS

By ^{DOUGLAS} DOUGLAS T. HAMILTON

ASSOCIATE EDITOR OF MACHINERY
AUTHOR OF "ADVANCED GRINDING PRACTICE,"
"AUTOMATIC SCREW MACHINE PRACTICE,"
"MACHINE FORGING," ETC.

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PREFACE

The design of shrapnel and the machining of its component parts are matters which, at the present time, are of world-wide interest to manufacturers, engineers, toolmakers, and mechanics in general. Shrapnel is used in enormous quantities in the great European war, and American machine tool builders have been called upon to provide machines and tool equipment of the latest and most efficient design to meet the demands made upon the manufacturers of shrapnel. Many shops are running full force, day and night, and are months behind with their orders. The great importance of shrapnel manufacture, at the present time, is, therefore, unquestioned.

A small percentage of shrapnel shells are now made from bar stock, but most shrapnel bodies are made from forgings, formed hollow in hydraulic presses or in forging machines. The forging processes, which are of extraordinary interest, especially to those who know something of the difficulties attending them, are, however, not finishing processes. Whether made from the bar or forged hollow, all shrapnel shells must be very accurately finished by machining.

This book has been brought out to meet the demands for a treatise dealing comprehensively with the construction, forging and machining operations, and the tool equipment used for making the shell, fuse parts, and brass cases. In this book are included not only the unusually complete articles on shrapnel manufacture contained in the April, 1915, number of *MACHINERY*, of which 5000 extra copies were printed and 5000 additional reprints made, all of which have been sold, but it also includes all other material that has been published at various times in *MACHINERY* relating to shrapnel manufacture, together with a great deal of material obtained by the Editors especially for this book; and, in addition to this, it contains abstracts of the official

specifications, together with line-engravings of the details of Russian, British, and American shrapnel shell bodies, fuses, and cartridge cases. Hence, it is believed that the book will prove the most valuable addition to the literature on the manufacture of munitions that has been made since the beginning of the great war.

D. T. H.

NEW YORK, *October*, 1915.

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