

**CUTTING COMPOUNDS
AND
DISTRIBUTING SYSTEMS**

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Cutting Compounds and Distributing Systems by Edward K. Hammond

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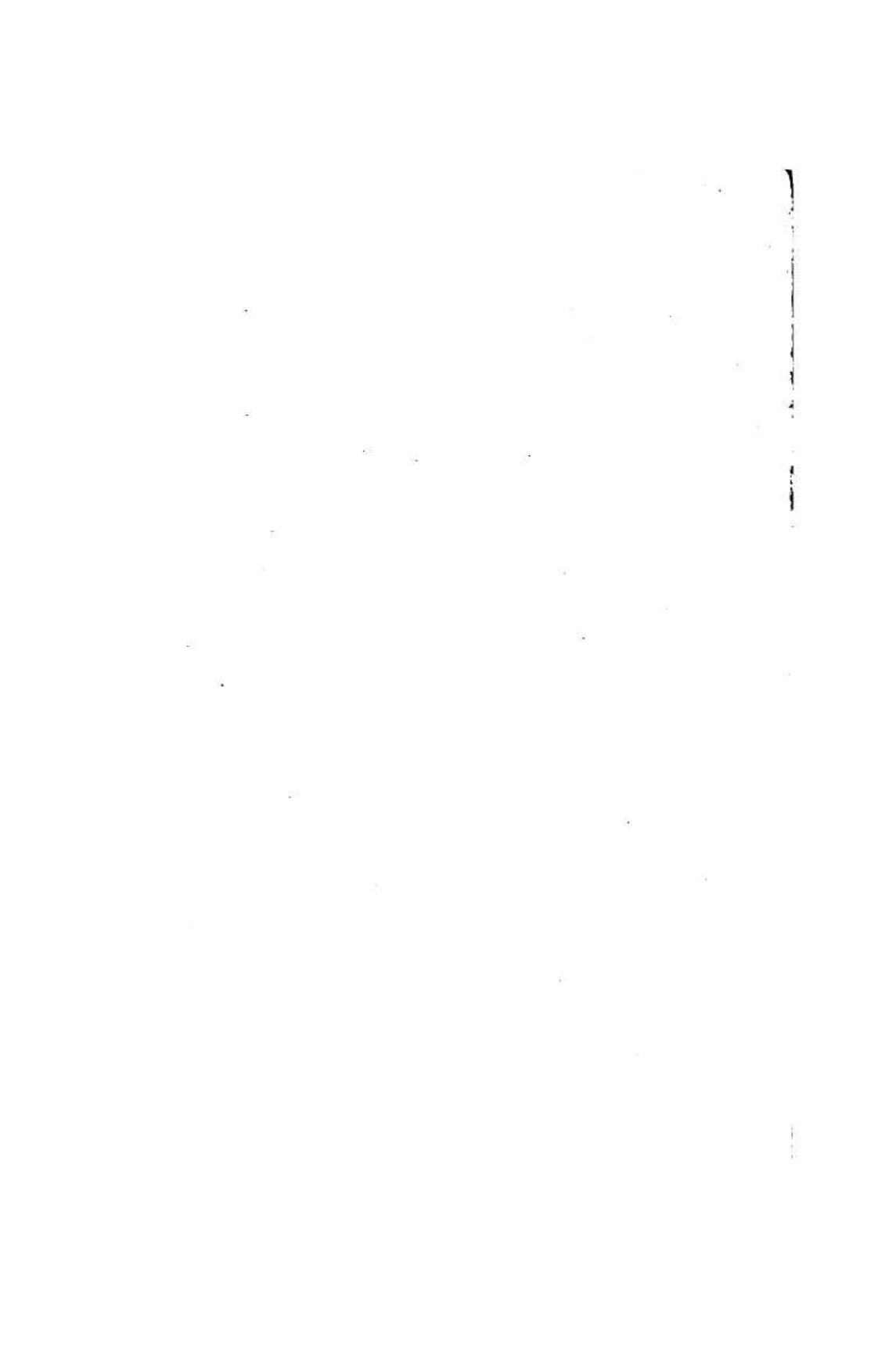
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EDWARD K. HAMMOND

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CUTTING COMPOUNDS AND DISTRIBUTING SYSTEMS

A TREATISE ON THE KINDS OF OILS AND COMPOUNDS
USED ON DIFFERENT CLASSES OF METAL-CUTTING
TOOLS AND MACHINES, INCLUDING DISTRIBUTING AND
RECLAIMING SYSTEMS, FILTERING, STERILIZING AND
TESTING METHODS

BY

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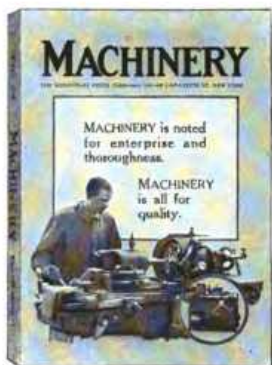
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PREFACE

A STUDY of current practice in the lubrication of metal-cutting tools shows that in many factories where the most modern methods of manufacturing are employed, little is known concerning approved methods of cooling metal-cutting tools by means of oils and compounds. This is doubtless due to the fact that it is difficult to place this subject upon a scientific basis, owing to the numerous variable factors involved. It must not be inferred from this statement that the general practice in the use of coolants is such as to produce inefficient results, although this is doubtless true in many cases; but a great many manufacturers have been content simply to use different oil mixtures and compounds which seem to meet the requirements, instead of determining definitely that the results secured are the best obtainable, as regards either cost or efficiency.

The supplying of oils or compounds to the cutting tools of machines of different types and to plants differing in size and arrangement, requires a careful study of local conditions because different shops have different problems. The object of this treatise is to present definite useful information concerning the characteristics and uses of oils and compounds for various metal-cutting operations, specifications for the purchase of oils and compounds, methods of distributing, means for applying to the tools and work, methods of collecting after use, recovering oil from chips, filtering and sterilizing, and many other phases of this important subject.

E. K. H.

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CUTTING COMPOUNDS AND DISTRIBUTING SYSTEMS

CHAPTER I

FUNCTIONS OF OILS AND COMPOUNDS AND THEIR GENERAL CLASSIFICATION

OIL or cutting compound is delivered to a metal-cutting tool in order to increase production, to give longer life to the tool, and in some cases to secure a better finish on the work. The functions of an oil or cutting compound may be presented under five heads: (1) To cool the work and cutter. (2) To wash away chips. (3) To lubricate the bearing formed between the chip and lip of the cutting tool. (4) To enable the cutting tool to produce a good finish. (5) To protect the finished product from rust and corrosion. Each of these functions is quite broad and prevents trouble from a large number of causes.

Cooling Tool and Work. The cooling action is the most important function. During the performance of any machining operation generation of heat is due to friction between the tool and work, and to distortion of the chips. This results in raising the temperature of both the cutting tool and the work; and if provision is not made for the removal of this heat, the temperature may become so excessive that the cutting edge of the tool breaks down. This means that there will be a great deal of time lost in stopping machines to change tools and in redressing and regrinding the worn-out tools. Another important consideration is the possibility of having the work raised in temperature so that it expands considerably during the machining operation, and while the tools may continue to