

**EXERCISES IN WOOD-WORKING,  
WITH A SHORT TREATISE ON  
WOOD; WRITTEN FOR MANUAL  
TRAINING CLASSES IN SCHOOLS  
AND COLLEGES**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649579525

Exercises in Wood-Working, with a Short Treatise on Wood; Written for Manual Training  
Classes in Schools and Colleges by Ivin Sickels

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**IVIN SICKELS**

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WITH A SHORT TREATISE ON WOOD

*WRITTEN FOR MANUAL TRAINING CLASSES  
IN SCHOOLS AND COLLEGES*

BY  
IVIN SICKELS, M. S., M. D.

NEW YORK .: CINCINNATI .: CHICAGO  
AMERICAN BOOK COMPANY

~~XXXXXXXXXX~~  
Nov. 10, 1914  
Gift of  
Luther S. Livingston,  
of Cambridge

TT185  
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## PREFACE.

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THE exercises in wood-working in this book were prepared by me during the summer of 1883, for the students of the College of the City of New York. Subsequent teaching suggested many changes and additions, until the manuscript was scarcely presentable. This manuscript has been copied for other schools; and now, in order that those who have recently asked for it may receive it in better shape, this little volume is printed.

I am indebted to Mr. Bashford Dean for the part relating to injurious insects, which was written expressly for this book.

I. S.

NEW YORK, *September, 1889.*

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## EXERCISES IN WOOD-WORKING.

### INTRODUCTION.

THE tendency of modern systems of education is toward a proper distribution of practical with theoretical training. The mind is to be aided in its development by the action of the eye and hand; and, in fact, all the special senses are employed in objective teaching and manual exercises. In school, the eye does more than interpret the printed page: it recognizes the form and color of objects, it must calculate their size, proportion, and distance, by observing and comparing them; the hand is required to do more than writing: it is taught to appreciate the weight, hardness, and other properties of objects, by actual contact with them. At first the introduction of drawing, modeling, and the use of tools, into the courses of study was experimental; but, having passed beyond that stage, these exercises are now known to be efficient aids to a more natural and rapid as well as stronger mental development.

There are some who, after being educated in the abstract way, can apply their training successfully to practical pursuits, who see no necessity for manual or industrial training in the schools, and who claim that superior and sufficient development may be obtained by the study of mercantile methods and the classics. These, however, form a very small percentage of the people, and systems of education must be arranged to stimulate all intellects, and not measured by the accomplishments of a few. Our best educators recognize this fact, and are modifying old systems by the greater introduction of manual elements. No one doubts the value of practical qualities, not only in ordinary people, but also in