SHOP MATHEMATICS

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649704095

Shop Mathematics by Edward E. Holton

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

www.triestepublishing.com

EDWARD E. HOLTON

SHOP MATHEMATICS

Trieste

SHOP MATHEMATICS

BY

EDWARD E. HOLTON

HEAD OF DEPARTMENT OF
MACHINE SHOP PRACTICE
THE TECHNICAL HIGH SCHOOL
SPRINGFIELD, MASSACHUSETTS

THE HAYTOL SERIES OF
TEXT BOOKS FOR INDUSTRIAL EDUCATION
EDITED BY FRANK E. MATHEWSON

THE TAYLOR-HOLDEN COMPANY
SPRINGFIELD, MASS. - - - - - 1910

PREFACE

This book is the result of twelve years' experience as draftsman and shop foreman combined with an equal length of service as instructor in day and evening classes in technical and trades schools.

The main feature of the book is the collection of practical shop problems, the most of them being either actual problems which have arisen in the author's experience or those suggested by that experience, and were first collected for use in his own classes.

The formulas given are those usually found in mechanics' hand books, and the author acknowledges his indebtedness to Wm. Kent and P. Lobbin for permission to use their formulas; also to Brown & Sharpe Mfg. Co. for courtesies extended, and especially to Mr. C. S. Bragdon of the Technical High School, Springfield, Massachusetts, for assistance in collecting and arranging material.

EDWARD E. HOLTON.

May, 1910.

CONTENTS

INTRODUCTION

CHARLES F. WARNER, Sc. D.
Principal of the Technical High School and of the Evening School of Trades, Springfield, Mass.

The loudest note sounded in all recent educational discussions is the call for more practical methods in presenting the fundamental subjects of study. It is claimed that language, science, and mathematics have been taught with too little reference to their utility in the vocations and in the ordinary affairs of life. The methods commonly employed in presenting mathematical subjects have been especially open to criticism. This is true even in some schools designed to give vocational training. Mathematical books of the kind traditional in the older schools have been continued in use in the newer and more practical schools. These books were written almost entirely from the point of view of the teacher of pure mathematics with little reference to concrete problems of life and having no reference whatever to the actual problems of the drafting-room and the shop. As a natural consequence the class room work in mathematics, in many of our most practical schools, has failed to utilize the material afforded by the shops and science laboratories to fix the knowledge of mathematical principles by concrete illustration and by practice.

There is much truth in the criticism. But what are we going to do about it? It will not do to cast aside the old-time algebras and geometries unless something really better can be found to take their place. The effort to make the

applications of mathematics more easily understood might lead to the substitution of a practical course in which the mathematical element is too much diluted. This would be folly. The real object should be to strengthen,—not to weaken—the teaching of mathematics in practical schools. What is needed is to purge the old books of useless material and put in place of it practical mathematical work distinctly planned to make up for the short-comings of the old methods when measured by the practical demands of modern times.

The author of "Shop Mathematics" has had many years' experience in designing and making machine tools and in a wide range of practical shop work. In addition to this he has had a long experience as a teacher of drawing and of machine shop practice and tool-making in schools for boys and for adults. This has given him an unusual opportunity not only to find out what is needed, but to discover the facilities for supplying that need. The book contains a selection of problems that actually arise in shop practice. This is what is needed by the young mathematical student and for two reasons,—first, that he may know what the shop problems are, and, second, that he may learn how to apply mathematical principles, rules, and formulas in the solution of such problems. No attempt is made in this book to teach mathematical theory or principles. That would be a needless repetition of countless books already in existence. "Shop Mathematics" may be used to supplement the course in elementary algebra, geometry, and trigonometry, and if used in this way it will be found of great value in technical schools. But abundant rules and formulas are given under each subject so that the book will also find a place in brief practical courses which do not admit of the use of the ordinary mathematical text-book.