

# **ELEMENTS OF DRAWING**

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Elements of Drawing by George F. Blessing & Lewis A. Darling

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**GEORGE F. BLESSING & LEWIS A. DARLING**

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OF DRAWING**





# Elements of Drawing

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## PREFACE

It is the purpose of this book to present a course of instruction in Elementary Drawing for beginners who intend to pursue a course in engineering or who desire to prepare themselves to do commercial drafting. The work herein outlined, as well as that contained in the companion volume, "Elements of Descriptive Geometry" by the same authors, is based on the drawing-room courses required of all first-year students in Mechanical and Electrical Engineering in Sibley College, Cornell University, as a preparation for the more advanced work of design in the second and third years of the course, which is also required of all students in the college.

The task of writing the book and its companion volume was undertaken by the authors, at the writer's request, while they were members of the staff of instruction of the Department of Machine Design and Construction of Sibley College. The object in view was twofold, namely, to obtain a book exactly suited to the needs of the Department, which we had heretofore been unable to do; and also to put into permanent shape the methods and principles used in this work, thus forming one of a correlated series of texts which eventually, it is expected, will fully cover the entire work of the department. The authors brought to the task a full knowledge of the more advanced work of the Department, having had experience in teaching these advanced subjects in design which, with their experience elsewhere both in practical and teaching positions, was of great aid in improving and refining this more elementary work.

There is nothing experimental in the principles or methods outlined in the book, as most of them have been in constant use in Sibley College for years and have been productive of most excellent results, not only in teaching the art of elementary drawing but as a preparation for the more advanced work in design.

v

Particular attention is given in the drawing-room work in Sibley College to the art of lettering and the methods presented in the chapter on lettering have been remarkably successful. Only two alphabets have been presented, it being considered best to confine the student's efforts to a thorough study and practice of those two which are of almost universal use rather than to make a superficial study of more elaborate alphabets which find very limited, or no use. The system of spacing was very largely developed by Prof. John T. Williams, who has taught it for a number of years with marked success. The authors have refined the system and also developed and presented a spacing chart, as it is believed that some instructors may prefer its use to that of rules.

In regard to the material on "drawing-room system," no claim is made by the authors that it is the best in the sense that there is a best system, but it is their belief, which is based on considerable experience, that if this system is well understood by the student he will have no trouble in understanding any other he may be called upon to work with.

Chapter V has been presented because of the growing popularity of isometric drawing in practically all branches of technical work.

It will be noted that though the book is based on the practice of Sibley College it is written in a flexible manner so as to be adaptable to almost any logical sequence of presentation, the general text matter applying equally to the drawing-board course presented or to a beginners' course arranged by instructors in the subject. The following suggestions by the authors as to the use of this book will make this clearer.

The text matter is intended to give in a practical and concise form such information as the beginner should have in order to intelligently pursue the drawing-board work.

*It is not supposed that lessons be assigned for recitation after the manner usually followed in teaching textbooks, that is, by beginning with Chapter I and assigning consecutive paragraphs to the end. The paragraphs should be assigned at the time the information can be applied directly to the drawing being executed.* To facilitate this method each drawing plate

has certain paragraphs assigned and at the completion of the plate there should be an examination, oral or written, covering these paragraphs. The proper method of covering the text previous to examinations will depend upon the methods of the institution using the book. It is most desirable to have regular recitation periods, and the authors believe one hour per week upon recitation should cover the work satisfactorily. Where this is impracticable the instructor should question the student *as he proceeds with his work in the drawing-room*. Especial attention should be directed to points where the student's work shows a lack of knowledge and he should be required to refer at this time to the parts of the text covering the points in question.

Where the book is used in this manner, that is, simply as a book of reference, a preliminary examination should be held after the completion of *each* plate. The instructor should constantly keep in mind the object of this book, which is to teach the student:

- 1st, how to select, care for, and use drawing instruments.
- 2nd, how to make and read technical drawings.
- 3rd, how to think over the drawing board.
- 4th, to lead him to consider the relation drawing bears to design, shop processes, and shop organization.

The third and fourth items are not usually given the attention their importance demands, and it is not unusual to see a college graduate make a beautiful drawing which is full of errors, due to the fact that all thought has been given to the drawing paper and none to the object it represents or to the shop methods necessary to produce this object. To aid in overcoming this difficulty the authors have avoided the use of models of the geometric or kindergarten type or of machine parts selected at random.

The models selected are parts of a wood-turning speed lathe, and are selected because the students will most likely be more familiar with this machine than any other. Also in most places where this course is taught the student will be working on his wood-turning exercises in the shop, on this machine, at about

the same time he is doing his drawing. For this reason he is most apt to study the principles of design involved, the relation of parts, etc., and thus do his work in a much more intelligent manner than if he held no further interest in the model than that of making a dimensional picture of it.

DEXTER S. KIMBALL,  
*Professor of Machine Design and Construction,*  
Cornell University.

June 8, 1912.

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#### AUTHORS' NOTE

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