

**TEXT-BOOK ON
PRACTICAL SOLID OR
DESCRIPTIVE GEOMETRY;
IN TWO PARTS-PART I**

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Text-Book on Practical Solid or Descriptive Geometry; In Two Parts-Part I by David Allan Low

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DAVID ALLAN LOW

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PRACTICAL SOLID OR
DESCRIPTIVE GEOMETRY;
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TEXT-BOOK
OR
PRACTICAL SOLID OR DESCRIPTIVE
GEOMETRY

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PREFACE.

THE AUTHOR, in writing this text-book, has endeavoured to meet the wants of both elementary and advanced students, and he believes that it will be found to contain all the descriptive geometry which is usually required by engineering and architectural draughtsmen. But while making the book comprehensive, and illustrating it fully, it has not been made of an inconvenient size for use in large classes.

The treatment of the subject in this work is slightly different from that in any existing books. The problems are stated in a more comprehensive way, and are made to include more cases than is usual with other writers. After the statement of the problem follows the general solution, which is usually given without reference to any particular example. Next comes the application of the problem to one or more examples. In many cases the student may not fully understand the general solution of a problem until he has worked out the example which illustrates it. The advantage of this mode of treatment is, that it is more systematic, and enables the student to get a more intelligent and comprehensive grasp of the subject. After working the examples and mastering the general solution of a problem, the student is better able to cope with any fresh examples which may come before him, than if he had learned the subject from examples only.

The elementary portion of the subject is treated of in Part I, and the more advanced portion in Part II.

A great want which the author has found in existing works on descriptive geometry is that of a sufficient number of good exercises properly graduated; he has, therefore, been at considerable trouble to collect and devise a large number of exercises, and he believes that in no other work of the kind will there be found such a good collection. In this matter he would record his indebtedness to the examination papers published by the Science and Art Department, which has done so much to promote the teaching of this and other science subjects throughout the country.

In conclusion, the author would like to impress upon the student the necessity of working out all the examples and exercises on paper with the drawing instruments, neatly and of full size. It is not enough for the student to know how a problem is to be solved, he must actually work it out; as very often, from the peculiar position of the points, lines, or planes, the result is quite different from what he would have expected.

D. A. L.

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PRACTICAL SOLID
OR
DESCRIPTIVE GEOMETRY.

PART I.

CHAPTER I.

INTRODUCTION.

Practical Solid or Descriptive Geometry is that branch of geometry which treats (1) of the representation of figures having three dimensions—length, breadth, and thickness—upon a plane surface, which has only two dimensions, namely length and breadth; and (2) of methods for determining from this representation the exact form of the figure represented.

Projection. The problems of Descriptive Geometry are best solved by means of the method of projections which we shall now consider.

When an object is seen by the eye of an individual, rays of light come from all the visible points of that object, and converge towards a point within the eye. Now suppose that a flat piece of glass is placed between the object and the eye of the spectator, and that each ray of light, in passing through the glass from the object to the eye leaves a mark on its surface of the same colour and tint as the part of the object from which the ray came, a picture would be produced on the surface of the glass; and if the object were now removed,