A PRACTICAL TREATISE ON THE STEAM ENGINE INDICATOR AND INDICATOR DIAGRAMS; WITH NOTES ON STEAM ENGINE PERFORMANCES, THE EXPANSION OF STEAM, BEHAVIOUR OF STEAM IN STEAM ENGINE CYLINDERS, AND ON GAS ENGINE DIAGRAMS

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A Practical Treatise on the Steam Engine Indicator and Indicator Diagrams; With Notes on Steam Engine Performances, the Expansion of Steam, Behaviour of Steam in Steam Engine Cylinders, and on Gas Engine Diagrams by Amice & W. Worby Beaumont

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BY

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EDITED AND ENLARGED

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PREFACE.

THE intention of the writer of this book has been to place in the hands of students and practical men a concise guide to the objects, construction and use of the Indicator, and to the interpretation of Indicator Diagrams. Care has been used to avoid lengthy discussion of theoretical or hypothetical matters which, although of great scientific importance, do not immediately concern those whose desire is to understand the practical employment of the Indicator as used by those interested in any way with the working of steam and other motors.

The plan upon which the Author has proceeded has been, firstly, to consider the object of an Indicator Diagram, or what it is desired that the diagram shall show; secondly, to describe the construction of the Indicator in its various forms, as successively devised for this purpose; thirdly, to describe the apparatus necessary for the attachment of the Indicator to the engine, and how to use the instrument; fourthly, to give examples of diagrams from all kinds of engines most in use, to interpret

these diagrams, and to show how far they agree with theoretical diagrams; fifthly, to show the most simple methods of calculating and constructing theoretical curves of expansion, and of comparing, in particular cases, the actual with the theoretical performance of steam in the steam engine cylinder.

In almost all cases simple arithmetical treatment has been adopted, so that the book shall be useful to practical men.

The thermo-dynamics of the steam engine or of other heat engines have not been considered as part of the subject of the book, but the behaviour of steam and its expansion under different conditions have been treated in a simple manner as far as these questions are important to the consideration of Indicator Diagrams in their most usual practical applications.

Some chapters of the book have appeared in the pages of *The Electrician*, but the greater part appears here for the first time.

Lastly, it has not been considered necessary to add to the book by again publishing tables of areas of circles or of steam pressures and temperatures, tables which are to be found in so many books, some of which are in the hands of every reader likely to require this work.