

**A CATECHISM OF HIGH PRESSURE OR
NON-CONDENSING STEAM ENGINES.
INCLUDING THE
MODELLING, CONSTRUCTING, RUNNING
AND MANAGEMENT OF STEAM ENGINES
AND STEAM BOILERS**

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STEPHEN ROPER

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OLIVER EVANS,
THE WATT OF AMERICA.

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With Illustrations.

BY STEPHEN ROPER,
ENGINEER.

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THIS VOLUME

IS

Dedicated

TO

ARTHUR ORR, D. M. P.,

AS A TRIBUTE OF RESPECT TO HIS EMINENT ABILITIES
AS AN ENGINEER AND MECHANIC.

INTRODUCTION.

THE writer of the following pages has made it his study to produce a work for the use of practical engineers, by furnishing them with a simple and clear explanation of each subject treated. In its preparation a great effort has been made to secure accuracy, and to render every subject plain and easy of comprehension, by treating it in a clear style, taking up each subject in regular order and examining it by the light of daily experience. The range of subjects comprehends everything directly connected with the steam-engine and steam-boiler. At the end of many of the articles, tables have been appended and examples introduced, to make explicit and distinct the principles set forth.

Many of the books heretofore published have been written by men of mere theory, for the purpose of instructing practical engineers in matters which the authors have never learned. Abstract theory can never meet the wants of practical men, nor instruct them in the discharge of their duties. But the writer does not wish to be considered an unbeliever in theories; because theories can never be dispensed with by any class of men, however unlearned, as theories aid us in the discovery of new facts and new truths. A book, however, to be useful to all classes

of engineers, must give strong evidence of the author's experience as a practical engineer. The writer has had an experience of over thirty years with every description of engines and boilers, and in the preparation of this little book he has drawn almost entirely upon his own experience and observation. His aim has been to convey his meaning, to those for whom it is intended, by means of plain language, with familiar and practical illustrations, and to instruct those who are intrusted with the care and management of steam-engines and steam-boilers, so that they may understand with certainty whether they are deriving the greatest amount of practical advantage from the power they have generated. Hints and examples have also been given, intended to show how a great many practical improvements can be made by engineers and owners of steam-engines.

Another feature of the work, and one which it is believed will greatly benefit engineers of limited education, is that the use of decimals has been dispensed with, and fractions also, except those expressed by the common signs, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$, &c.

In order to render the book useful to those who employ or are employed about steam-engines, the writer has endeavored to embody all the necessary information relative to improvements in the construction, use and management of steam-engines and steam-boilers that have come into use up to the present time.

S. R.