

**AN ELEMENTARY TEXT-BOOK
ON STEAM ENGINES AND
BOILERS. FOR THE USE OF
STUDENTS IN SCHOOLS AND
COLLEGES**

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An elementary text-book on steam engines and boilers. For the use of students in schools and colleges by J. H. Kinealy

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J. H. KINEALY

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ELEMENTARY TEXT-BOOK
ON
STEAM ENGINES AND BOILERS.

FOR THE USE OF STUDENTS IN SCHOOLS
AND COLLEGES.

BY
J. H. KINEALY,

*Professor of Mechanical Engineering, Washington University,
St. Louis, Mo.*

ILLUSTRATED WITH DIAGRAMS AND NUMEROUS CUTS
SHOWING AMERICAN TYPES AND DETAILS
OF ENGINES AND BOILERS.



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P R E F A C E.

This book is written solely as an elementary text-book for the use of beginners and students in engineering, but more especially for the students in the various universities and colleges in this country.

No attempt has been made to tell everything about any one particular subject, but an attempt has been made to give the student an idea of elementary thermodynamics, of the action of the steam in the cylinder of the engine, of the motion of the steam valve, of the differences between the various types of engines and boilers, of the generation of heat by combustion, and the conversion of water into steam.

Care has been taken not to touch upon the design and proportion of the various parts of engines and boilers for strength; as, in the opinion of the writer, that should come after a general knowledge of the engine and boiler has been obtained.

In the derivation of some of the formulæ in thermodynamics, it has been necessary to use the calculus, but the use of all mathematics higher than algebra and geometry has been avoided as much as possible.

An earnest endeavor has been made to present the subject in a clear and concise manner, using as few words as possible and avoiding all padding.

J. H. KINEALY.

WASHINGTON UNIVERSITY,
August, 1895.

(iii)

PREFACE TO THE FOURTH EDITION.

This edition is practically the same as the previous one. The only change made has been to correct some typographical errors.

J. H. KINEALY.

BOSTON, MASS.,
August, 1903.

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