EXERCISES ON MECHANICS AND NATURAL PHILOSOPHY; OR, AN EASY INTRODUCTION TO ENGINEERING, FOR THE USE OF SCHOOLS AND PRIVATE STUDENTS: CONTAINING VARIOUS APPLICATIONS OF THE PRINCIPLE OF WORK; THE THEORY OF THE STEAM ENGINE, WITH SIMPLE MACHINES

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THOMAS TATE

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BY THOMAS TATE,

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PREFACE.

THE present work is intended to supply Elementary Teachers, and Students of Engineering, with simple, and at the same time demonstrative, expositions of the great leading principles of Practical Mechanics and Natural Philosophy. With the view of rendering the subject available for elementary instruction, the demonstrations are, for the most part, conducted on purely arithmetical principles; and numerous problems are given throughout the work as exercises for the pupil.

I have consulted the able writings of Poncelet, Pambour, Morin, and Whewell; but the chief source of my information has been "The Mechanical Principles of Engineering and Architecture," by Professor Moseley, — indeed not a few of the subjects explained in the present volume, were adopted in consequence of the suggestions of this distinguished mathematician. Those who wish to pursue the subject farther, must study the great work just referred to.

Without affecting any great claim to originality, I flatter myself that the scientific reader will here and there find something like new applications of the principles of WORK. The formula which I have given for

finding the centre of gravity of an arch, cannot fail of meeting with the approbation of practical engineers, on account of its precision, and the labour which it is calculated to save, in determining the equilibrium of the arch; and I may also venture to say, that the simple and arithmetical form given to many difficult problems on WORK, especially those on the Steam Engine, will merit the attention of teachers, and students of engineering.

If this work should prove,—as it is designed to be,—a useful contribution to the educational writings of our times, it will afford me the highest pleasure, as it will give me the proudest recompence.

T. TATE.

Battersea, Feb. 1847.

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