

**THE STEAM ENGINE FROM THE  
EARLIEST TO THE PRESENT TIME;  
ATMOSPHERIC RAILWAYS - THE  
ELECTRIC PRINTING TELEGRAPH,  
AND SCREW PROPELLER; PP. 1-142**

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The Steam Engine from the Earliest to the Present Time; Atmospheric Railways - The Electric Printing Telegraph, and Screw Propeller; pp. 1-142 by Edward Portwine

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**EDWARD PORTWINE**

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THE  
STEAM ENGINE,

FROM THE EARLIEST TO THE PRESENT TIME.

ATMOSPHERIC RAILWAYS—THE ELECTRIC PRINTING  
TELEGRAPH, AND SCREW PROPELLER.

BY EDWARD PORTWINE,

EDITOR OF "CARPENTER'S HOUSE TO MEMORY," &c., &c., &c.

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1847.



## DEDICATION.

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TO ALEXANDER SMITH, ENGINEER,  
(*Croydon Atmospheric.*)

MY DEAR SIR—Perhaps I am the first person who ever dedicated a work to a Practical Mechanic. Rank and wealth are generally selected.

I estimate intellectual attainments and a love of science, far above titled ignorance or presumptuous wealth.

The qualities you possess—as honorable as they are rare—your ardent desire for the progression of science—induces me to inscribe this book to you.

And may that friendship, which we have reciprocated, continue, until old age has covered our temples with the frosts of many winters, or until the principle of ATMOSPHERIC TRACTION, for which we have contended, is added to the list of proved sciences.

I am, my dear Sir,  
Yours very truly,  
EDWARD PORTWINE.

SNOW'S FIELDS FACTORY,  
BERMONDSEY.

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## P R E F A C E .

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If the reader of this volume derives half the pleasure in its perusal that the composer experienced in writing it, the end for which he laboured will be attained.

It is an extraordinary fact, that in this age when knowledge is so easily obtained, so much ignorance is displayed by individuals who it is presumed ought to be well informed.

Stand on the deck of a steam-boat—rush through space propelled by steam or atmospheric pressure—gaze on the mysterious electric printing telegraph, or witness the beautiful evolutions of a screw vessel—have a thousand companions with you, and how many will you find that can inform you the variety of steam engine you are propelled by. Atmospheric pressure, electricity, and the operations of the screw, are all inexplicable to the vast majority.

This want of information has frequently caused us pain, and induced in our hearts a determination to publish a manual, which the scientific and the masses could easily understand: we have avoided

all technicalities, although we have a sufficient regard for science; and in producing this volume we have relied on practical information, without rejecting theory—for there are, and always will be—theorists to conceive—mechanics to execute.

We hope that all readers of this work, will rise from it, impressed with an opinion that there are facts contained in it, which have been worth the time consumed in its perusal—and that there is information useful and delightful, which will render them fit members of any society, whether it be in the saloons of our elegant steam boats—our crowded railway carriages, or in the commodious departments of our multitudinous stations.

This little book will recal to some the dim remembrance of their past struggles for the interests of science—while it may, for the first time, awaken in the hearts of others, a lively determination to remain no longer in ignorance—preferring the everlasting operations of nature and art to that fleeting literature which leaves no good impression on the mind.

EDWARD PORTWINE.

## THE STEAM ENGINE.

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### CHAPTER I.

BEFORE the Christian era, the force of steam was known. Hero, a learned mechanician, who wrote 130 years before the Christian era, invented a "toy," which he called the *Æolipile*. He was acquainted with the properties of the forcing pump, invented by Cetesibius. He also invented an excellent contrivance for an artificial fountain—a machine for producing a rotatory motion by a jet of heated air. This is still called "Hero's Fountain." This philosopher also invented many other mechanical instruments. The *Æolipile* consists of a globular metallic vessel, with tubes revolving on two pivots.

Barker's Mill is on the same principle as the *Æolipile*; and although it has not lately been made use of, yet it exhibits motion produced by the force of steam. It is a simple contrivance. Avery, the American engineer, proposed it as a moving power. The machine by Hero, for raising water by the sun's rays on the air, in a globe two-thirds full of water, the air expanding, and pressing the water through a tube, was ineffective, as it would only raise a few drops of that element; therefore, to raise water from mines to the re-