

**THE STEAM JACKET, PRACTICALLY
CONSIDERED AS AN EFFICIENT FUEL
ECONOMISER. A TREATISE ON THE
ECONOMICAL USE OF STEAM FOR ENGINE-
BUILDERS, ENGINE-DRIVERS, MILL-
MANAGERS, AND STEAM-USERS GENERALLY**

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The steam jacket, practically considered as an efficient fuel economiser. A treatise on the economical use of steam for engine-builders, engine-drivers, mill-managers, and steam-users generally by William Fletcher

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WILLIAM FLETCHER

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A TREATISE ON THE
*ECONOMICAL USE OF STEAM FOR ENGINE-BUILDERS,
ENGINE-DRIVERS, MILL-MANAGERS, AND
STEAM-USERS GENERALLY,*

BY
WILLIAM FLETCHER,

AUTHOR OF
"THE HISTORY AND DEVELOPMENT OF STEAM LOCOMOTION ON COMMON ROADS."

WITH SIXTY-THREE ILLUSTRATIONS.

Second Edition, Revised and Enlarged.

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PREFACE TO THE FIRST EDITION.

THE origin of this little book may soon be told. Some years ago, the author purposed writing a letter to one of the engineering journals on the Steam-Jacket, in reply to a correspondent who sought information on the subject. A large amount of matter was collected, but, owing to the time devoted to the search, he was led to relinquish the idea of the letter. But he continued the study, with a view, at some distant date, of writing a book on the steam-jacket. When busily engaged with this work, it was found that little or nothing had been said about the misapplication of the steam-jacket; while experience showed that a large number of the so-called steam-jackets were steam-jackets in name only. The utility of four out of every six jackets that were examined must have been impaired by imperfections. In the present treatise the author has shown the defects in many steam-jacketed cylinders, and also given some of the principles relating to their proper design and application. As this book furnishes the only information on this neglected subject, he trusts that the contents may prove of some service to designers and makers of steam-engines. Mention may be made here that the scarcity of engineering books written by practical

men,* has served as an incentive to energy, hoping that this first literary venture, emanating from the drawing-office and works, may meet with some measure of support and approval.

Our cleverest engineers, and those most competent to write good practical books which would be of permanent value to the rising generation of engineers, are so busily engaged in the manufacture of engines, that they have not the time to write about them, for the very reason that the manufacture of engines is a far more profitable undertaking than the production of books relating to engines.

In many engineering books, the efforts of the authors are spread over such a large surface that the information given is too superficial to be of any real value: where a few lines are devoted to the explanation of each detail of the steam-engine for instance, in all probability those few lines fail to supply the information needed, and serve no good purpose to the inquiring mind. Who does not remember reading numerous books of this class in the hope of finding some valuable notes, and, after wading through the contents, have had to close them in disappointment?

Take, for illustration, the valuable detail we are studying—the steam-jacket. In many works on the steam-engine it is not even mentioned; in some, two or three paragraphs only are devoted to its consideration; and those few who have written more lengthily have treated it, like many more engineering subjects, in a theoretical style, so that the literature is adapted for students only, and is perfectly useless in the

* "Well written, practical books, from the pens of competent practical men, are as scarce and nearly as valuable as gold."—*The Engineer*, 17th May 1872.

workshop, and, in the majority of cases, of very little real service in the drawing-office.

If authors would confine themselves to the study of one detail, and thoroughly ventilate it, their remarks could not fail to be of practical service; indeed, this is just the style of book relating to the steam-engine of which there is the greatest need.

It may be owing to this dearth of literature, in a great measure, that accounts for such widespread ignorance respecting the use of the steam-jacket prevailing among engineers. It is to many a perplexing paradox. When engine-makers, who do *not* apply it, evidence some hazy notions respecting its utility, there is no occasion for surprise. But, when we find engineers at the head of one of the largest portable engine firms (who profess to have jacketed their earliest engines, and still continue the practice) saying that the cylinder is protected from "*cold and radiation*" by means of a jacket of steam, clearly showing that the function of the steam-jacket is not understood by the writers, it does cause some astonishment. They can be excused on the ground above named, viz., the fragmentary nature of the information relating to this subject. One writer says:—"Almost every engineer knows now-a-days that a cylinder should be kept as hot as possible; but very few makers of steam-engines understand the precise reasons why a cylinder should be kept hot. Most people imagine that the condensation takes place by conduction through the metal of the cylinder to the outside."

We have related at page 71 an instance wherein an engine-maker thought a steam-jacket was not required, because the cylinders were well lagged and felt comparatively cool on the surface.

As a consequence of the prevalence of these

mistaken notions, it follows that very little, if any, good has resulted from the voluminous discussions on steam-jacketing. The practical conclusion of the whole matter appears to be:—*The fact of the utility of the steam-jacket, when properly applied, cannot be gainsaid*, but, owing to numerous cases of internal mal-arrangement, its efficiency is impaired or destroyed, occasioning in some quarters a doubt respecting its advantage.

W. FLETCHER.

BASINGSTOCKE,

PREFACE TO THE SECOND EDITION.

THE first edition of *The Abuse of the Steam-Jacket Practically Considered*, is exhausted. It is believed that a second edition of the work is required. The first edition was not only favourably reviewed by many of the technical journals, but the author received some friendly letters from (previously unknown) correspondents, thanking him for the work, and acknowledging the service rendered by it to designers of steam-engines particularly. *The Electrical Review*, in commenting on one of the author's articles on this subject, said:—"Mr. Fletcher has been discussing jackets for many years, and there is still very good cause to continue the discussion. It is much to be feared that numerous learned disquisitions have appeared on the behaviour of steam in the cylinder, which have been argued out with a great array of mathematics from results whose true meaning has been entirely obscured by faulty construction. Papers like this of Mr. Fletcher's might well be kept in type, and used at periodical intervals, as corrective of that depravity of design which lends so much force to the arguments in favour of the totality of the specially human failing to go wrong where it is as easy to go right."* It is gratifying also to know that a perusal of the little book led to a set of standard engine cylinder patterns

* *The Electrical Review*, 2nd June 1893.