

**EXPERIMENTS ON THE  
STRENGTH OF  
WROUGHT-IRON AND  
OF CHAIN-CABLES**

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Experiments on the Strength of Wrought-Iron and of Chain-Cables by L. A. Beardslee

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**L. A. BEARDSLEE**

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FRONTISPIECE.



FIG. 1.

THE PHENOMENON OF "BARKING," AS MANIFESTED BY IRONS F AND Ex. (See Page 36.)

*a*

*b*

*c*

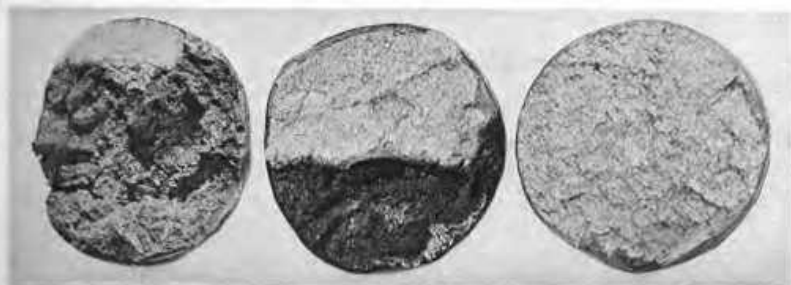


FIG. 2.

DIFFERENCE IN APPEARANCE OF FRACTURES PRODUCED BY IMPACT, OF VARYING DEGREES OF ENERGY, THE MATERIAL BEING THE SAME. (See Page 35.)

BEARDSLEE ON WROUGHT-IRON AND CHAIN-CABLES.

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EXPERIMENTS  
ON THE  
STRENGTH OF WROUGHT-IRON  
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REPORT OF THE COMMITTEES OF THE UNITED STATES BOARD  
APPOINTED TO TEST IRON, STEEL AND OTHER METALS,  
ON CHAIN-CABLES, MALLEABLE IRON, AND  
RE-HEATING AND RE-ROLLING  
WROUGHT-IRON;

INCLUDING

MISCELLANEOUS INVESTIGATIONS INTO THE PHYSICAL  
AND CHEMICAL PROPERTIES OF ROLLED  
WROUGHT-IRON.

BY

COMMANDER L. A. BEARDSLEE, U.S.N.,

*Member of the Board, and Chairman of the Committee.*

Revised and Abridged

BY

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Associate Editor of the "American Manufacturer and  
Iron World," Pittsburgh, Penn.*

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## PREFACE.

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THE Report of which the following pages are an abridgment was published by the United States Government in 1879, as part of Executive Document No. 98, House of Representatives, Forty-fifth Congress, Second Session.

It forms an octavo of two hundred and sixty-seven pages, with thirteen heliotype-plates, and several wood-cuts. It is not only by far the most elaborate record of tests of wrought-iron and of chain-cables that has ever been given to the world, but it is the most valuable in results; in describing newly observed phenomena, in tabulating variations of strength due to differences in methods of manufacture, and revealing their causes, in investigation of the effect of impact, in pointing out causes of defects in strength of both bars and cables, and generally in giving information that is of immediate practical value to manufacturers of iron and to engineers.

As but a limited number of copies of the report were issued by the Government, and as it contains a large amount of detailed tabular matter, which, while necessary in an official report of this kind, to corroborate the conclusions deduced, is not necessary to a full comprehension of these conclusions,—it has been thought that an abridgment would be acceptable to many who would be unable to obtain the original work.

The undersigned, in preparing the abridgment, has had the full consent of Commander Beardslee, and obtained his approval of the manuscript prior to publication.

WM. KENT.

PITTSBURGH, PENN., May, 1879.





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