

**SOUND AND ITS
RELATION
TO MUSIC**

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Sound and Its Relation to Music by Clarence G. Hamilton

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CLARENCE G. HAMILTON

**SOUND AND ITS
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TO MUSIC**

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AND ITS RELATION TO
MUSIC

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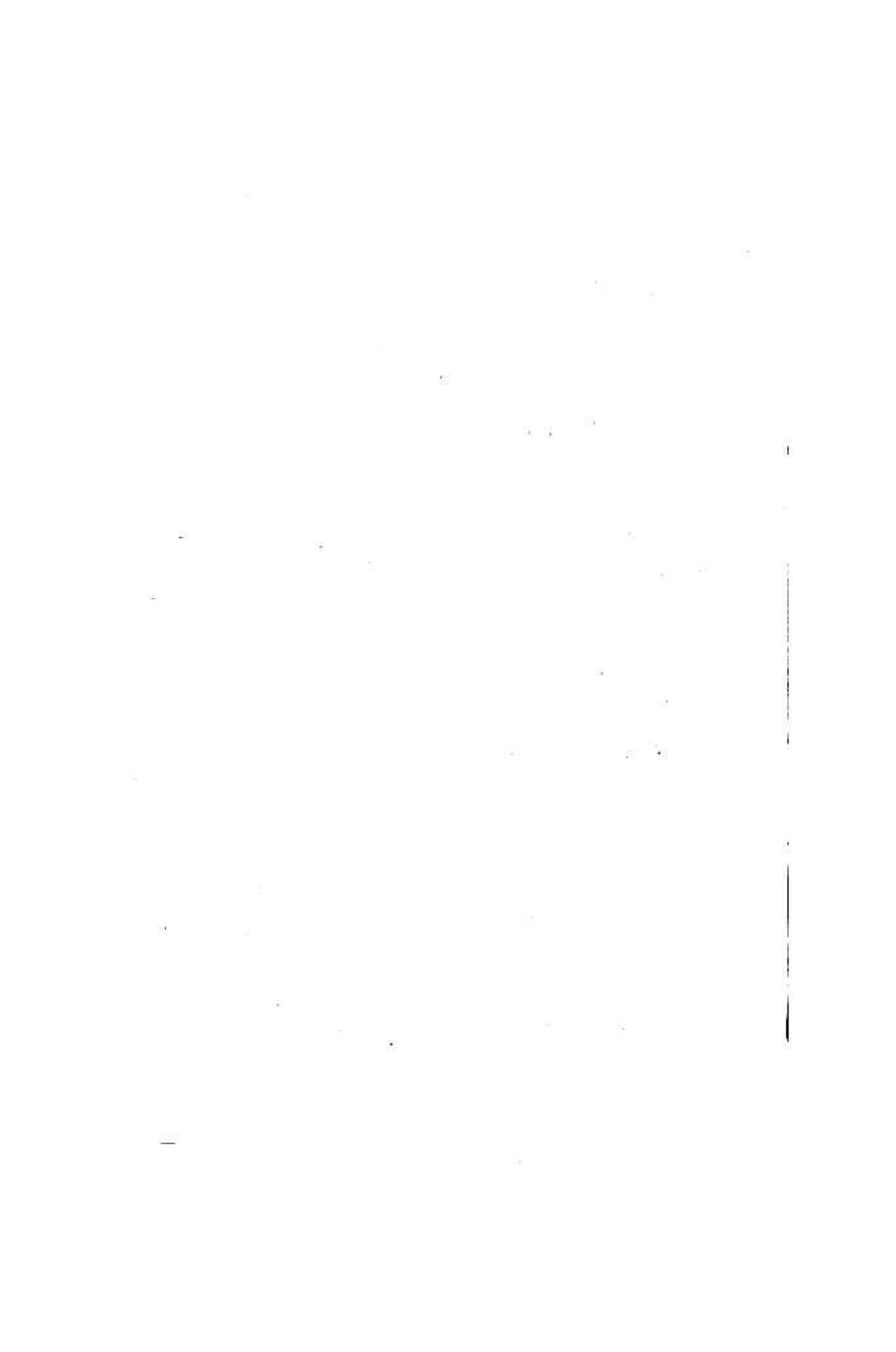
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DEDICATION

To my very dear friend
Professor Hamilton C. MacDougall



PREFACE

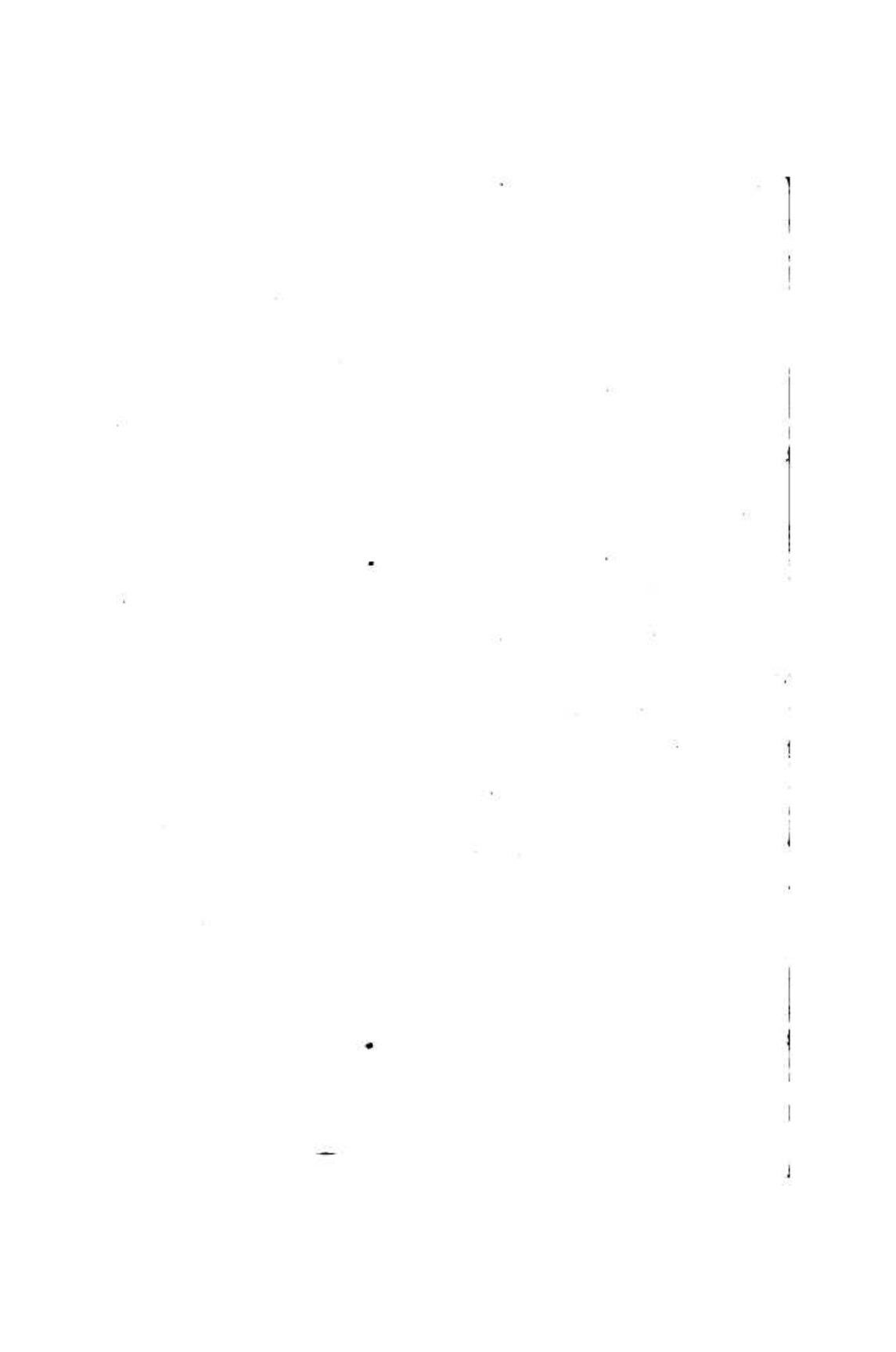
EVERY intelligent musician should be familiar with the physical laws which underlie his art. In the following pages will be found a compact statement of these laws and of the chief facts, theories and experiments in accordance with which they have been formulated. The nature and transmission of sound, its various elements and manifestations, the musical materials derived from it and the application of these materials in the construction of instruments are some of the matters discussed.

In order to facilitate further reading in regard to any of the subjects broached, references are given at the end of each chapter to correlative parts of important works on acoustics, of which a list is appended. Abstruse mathematical works like those of Airy or Lord Rayleigh are excluded. Books are referred to in individual chapters simply by the last names of their authors.

Scientists and musicians have been slow in coöperating, and at times have even antagonized each other. It is hoped that in the future mutual helpfulness will take the place of distrust, and that due allowance may be made by either party for slight points of divergence between mathematics and æsthetics. That the present book may aid toward this result is the earnest wish of its author.

CLARENCE G. HAMILTON.

WELLESLEY, MASS., June, 1911.



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Marcus M. Henry
- Musician Manager -
- San Francisco -
1915

LIST OF REFERENCE BOOKS

- BARNES, C. L. *Practical Acoustics*.
Macmillan and Company, London, 1909. \$1.10.
Consists mainly of a series of experiments.
- BARTON, EDWIN H. *A Text-book on Sound*.
Macmillan and Company, London, 1909. \$3.00.
A highly technical treatise. Illustrated.
- BLASERNA, PIETRO. *The Theory of Sound*.
D. Appleton and Company, New York, 1876. \$1.50.
Readable and non-technical. Illustrated.
- BROADHOUSE, JOHN. *Musical Acoustics*.
William Reeves, London. Fourth edition, 1905. \$3.00.
"The Student's Helmholtz." Illustrated.
- CATCHPOOL, EDMUND. *A Text-book of Sound*.
W. B. Clive, London, 1894. \$1.50.
Somewhat technical in character. Illustrated.
- HARRIS, T. F. *Handbook of Acoustics*.
J. Curwen and Sons, London. Revised 1910. \$1.25.
A well-outlined treatment, with examination questions. Illustrated.
- HELMHOLTZ, H. L. F. *The Sensations of Tone*.
Longmans, Green and Company, London. Third edition, 1895. \$9.50.
The standard work on acoustics.
- LAVIGNAC, ALBERT. *Music and Musicians*.
Henry Holt and Company, London. Revised 1907. \$1.75.
The first part contains a concise treatment of acoustics.
- POLE, WILLIAM. *The Philosophy of Music*.
Trübner and Company, London, 1879. \$3.00.
Discusses the materials used in music.
- POYNTING AND THOMPSON. *Sound*.
Charles Griffin and Company, London, 1909. \$2.75.
Somewhat technical. Fully illustrated.
- STONE, W. H. *Elementary Lessons on Sound*.
Macmillan and Company, London, 1895. \$0.90.
A compact treatise. Illustrated.
- TAYLOR, SEDLEY. *Sound and Music*.
Macmillan and Company, London, 1883. \$2.50.
Written in an interesting style.
- TYNDALL, JOHN. *Sound*.
D. Appleton and Company, New York. \$2.00.
A standard popular work. Illustrated.
- ZAHM, J. A. *Sound and Music*.
A. C. McClurg and Company, Chicago, 1892. \$2.00.
Very readable and fully illustrated.