

# **The Atomic Theory as Applied To Gases, with Some Experiments on the Viscosity of Air**

by

Silas W. Holman

Submitted to the Department of Physics  
in partial fulfillment of the requirements for the degree of

BACHELOR OF SCIENCE IN PHYSICS

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June 1876

© 1876 Silas W. Holman. All rights reserved.

The author hereby grants to MIT a nonexclusive, worldwide, irrevocable, royalty-free license to exercise any and all rights under copyright, including to reproduce, preserve, distribute and publicly display copies of the thesis, or release the thesis under an open-access license.

Authored by: Silas W. Holman  
Department of Physics  
May 18, 1876

Certified by: Edward C. Pickering  
Professor of Physics, Thesis Supervisor

Accepted by: Primus Castor  
Professor of Wetlands Engineering  
Undergraduate Officer, Department of Physics

# The Atomic Theory as Applied To Gases, with Some Experiments on the Viscosity of Air

by

Silas W. Holman

Submitted to the Department of Physics  
on May 18, 1876 in partial fulfillment of the requirements for the degree of

BACHELOR OF SCIENCE IN PHYSICS

## ABSTRACT

The developments of the “kinetic theory” of gases made within the last ten years have enabled it to account satisfactorily for many of the laws of gases. The mathematical deductions of Clausius, Maxwell and others, based upon the hypothesis of a gas composed of molecules acting upon each other at impact like perfectly elastic spheres, have furnished expressions for the laws of its elasticity, viscosity, conductivity for heat, diffusive power and other properties. For some of these laws we have experimental data of value in testing the validity of these deductions and assumptions. Next to the elasticity, perhaps the phenomena of the viscosity of gases are best adapted to investigation.<sup>1</sup>

Thesis supervisor: Edward C. Pickering  
Title: Professor of Physics

---

<sup>1</sup>Text from Holman (1876): doi:[10.2307/25138434](https://doi.org/10.2307/25138434).